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OAIP

Ontario
Assessment
Instrument
Pool

Mathematics

ARITHMETIC

JUNIOR DIVISION

Ministry
of
Education
Ontario

Sean Conway, Minister

Mathematics
ARITHMETIC

JUNIOR DIVISION

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JUNIOR DIVISION MATHEMATICS: ARITHMETIC

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ONTARIO ASSESSMENT INSTRUMENT POOL
BANQUE D'INSTRUMENTS DE MESURE DE L'ONTARIO

The Ontario Assessment Instrument Pool/Banque d'instruments de mesure de l'Ontario (OAIP/BIMO) is a resource designed to assist those in education in fulfilling their responsibilities for evaluating student achievement and the effectiveness of programs in elementary and secondary schools. OAIP/BIMO consists of a large collection of questions in a variety of formats for several subject areas and grade levels. These questions are based on Ontario curriculum guidelines.

OAIP/BIMO materials are intended for use at the classroom, school, system, and provincial levels. At the classroom level, they can be used for instructional as well as assessment purposes. At all levels, their use can provide information related to student achievement for the purposes of (i) evaluating and planning improvements in educational policies and instructional programs, (ii) reporting on the effectiveness and appropriateness of existing policies and programs, and (iii) reporting on the overall progress of groups of students. OAIP/BIMO materials are designed to augment currently used evaluation strategies and tools. It is inappropriate to use them for the purpose of teacher evaluation. Public reporting of comparisons between classes or schools or school boards would also be inappropriate.

POOLS CURRENTLY AVAILABLE

OAIP	English	Intermediate Division
	Geography	Intermediate Division
	History	Intermediate Division
	Mathematics	Junior Division
	French as a Second Language	Grades 6 and 10
	Chemistry	Senior Division
	Physics	Senior Division
BIMO	Anglais	Cycle moyen
	Anglais	Cycle intermédiare
	Français	Cycle moyen
	Français	Cycle intermédiare
	Géographie	Cycle intermédiare
	Chimie	Cycle supérieur
	Physique	Cycle supérieur
	Histoire	Cycle intermédiare (available in Fall 1986)

POOLS BEING DEVELOPED

Pool	Tentative Release Date
OAC Biology	June 1988
Language Arts, Junior Division	January 1989
Mathematics, Intermediate Division (New Pool)	June 1989
Science, Intermediate Division	June 1989
English, Senior Division	June 1989
Science, Junior Division	June 1989
Mathematics, Senior Division	December 1989
Français, cycle supérieur	September 1990
Mathématique, cycle moyen	February 1987

Arrangements are being made for the development of BIMO pools for Intermediate and Senior Divisions in Mathematics and Science.

Basic level pools will also be developed for English, Mathematics, and Science and equivalent pools will be developed for BIMO.

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Special appreciation is extended to all those principals, teachers, and students who participated in the Screening Trials of the instruments prepared for this pool.

INTRODUCTION

The Ontario Assessment Instrument Pool is a collection of assessment instruments designed to serve two basic functions: to be a resource for the evaluation of programs at the provincial and local levels and to assist teachers in evaluating student achievement for both diagnostic and summative purposes. They can also be used for instructional purposes.

The instruments in the Junior Division Mathematics pool have been created to match the expectations for mathematics listed in The Formative Years, pages 11, 12. Because each expectation identifies a large amount of learning to be accomplished over the three years of the Junior Division, the expectations have been broken down into lists of specific objectives representing small steps toward the achievement levels intended for students at the end of this Division. Curriculum documents from twenty-three boards of education were reviewed during the process of creating the essential framework for the development of the instruments in this pool.

Structure of the Pool

The material in this pool has been carefully organized to parallel the mathematics outlined for the Junior Division in The Formative Years. It should be emphasized that this arrangement should not determine or even influence the order in which topics are taught. Education in the Primary and Junior Divisions makes it clear that arithmetic, measurement, and geometry should be integrated and that mathematics as a whole should be firmly linked to communication skills as children learn to represent their experiences and their thinking. This pool has been designed to make the identification and retrieval of particular instruments as simple as possible for the teacher. There are three strands - arithmetic, measurement, and geometry. Each strand is divided into two sections as illustrated in this chart:

STRAND	Arithmetic	Measurement	Geometry
SECTION	Numeration	Quantification	Configuration
	Relationships	Relationships	Relationships

The emphasis on relationships in each of the strands is a serious attempt to apply two of the most important assumptions about learning expressed in Education in the Primary and Junior Divisions - "Most human activity is a purposeful search for pattern" (page 75) and " ... (mathematical) models help children to see relationships in the environment and thus to make sense of the world about them" (page 61). Over 60 per cent of the instruments in this pool are in the sections labelled Relationships.

In addition, objectives are classified according to topic, sub-topic, and category. Pages where the instruments for a new objective begin are identified by a classification table such as this:

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Estimation	Applications

While the topics and sub-topics are unique to individual strands and sections, the category labels are common to all. Every objective is identified as being concerned with concept development (understanding), knowledge of facts and operations (skills), or applying concepts and skills in simple problems (applications). While the boundaries between these categories are not always clear, this kind of classification of the objectives will help in the choice of instruments for diagnostic purposes. Teachers are aware that concepts are formed gradually as a result of suitable experiences and discussion. Once a concept is firmly grasped it is unlikely to be forgotten but there is usually a time when it is unstable. During this period it may seem to be established in some situations and not in others. It is for this reason that we cannot look for precision in evaluating understanding and yet we cannot ignore it just because it is difficult to assess. At any one time it is much easier to determine whether or not a student knows a particular fact or can perform specific skills. This knowledge or skill diminishes without frequent real use or, at least, regular practice. Applying mathematics is one of the prime reasons for studying the subject. Where problems are noted in applications, the difficulty may be in the understanding or skills involved. For this reason, in diagnosis, it is useful to refer to instruments on the same sub-topic but under the other categories.

In addition to the classification scheme already described, most objectives are grouped in pairs to emphasize the concept of reversibility which is so critical in assessing levels of competence. For example, in the Arithmetic strand under the topic Whole Numbers, Representation, Objective 8 is "Given the expanded form of a whole number less than one million, the student will identify that number." Objective 9 follows, "Given a whole number less than one million, the student will express it in expanded form." It is important that assessment activities include instruments from each one of the pairs of objectives.

Features of the Instruments

The major purpose of the Ontario Assessment Instrument Pool is to provide teachers and administrators with a bank of good quality questions. The development of this pool has stretched over several years and involved hundreds of educators throughout Ontario. Several thousand students participated in the Screening Trials which provided data for assessing format, difficulty level, and suitability of each instrument. This process led to the removal of many questions involving the use of concrete materials since the availability of such materials could not be guaranteed because of the random selection of participating classrooms. This shortcoming of the pool must not be allowed to influence good teaching which should rely heavily on activity-based learning situations.

The instruments related to each objective may involve one of three types of stimuli and one of three modes of response. Questions may make use of objects (Concrete), representations of objects (Diagram), or descriptions of objects (Verbal), in setting the problem. Answers are to be recorded using multiple choice, a written response, or a sketch. In some cases, the same question is presented in all three formats, each requiring at least two modes of response. While over 40 per cent of the instruments in this pool are multiple choice questions, some oral questions involving concrete materials have been included as models for possible expansion of the pool by groups of teachers. The variety in instrument design adds an element of flexibility that should help teachers devise appropriate assessment activities for the different purposes that arise in every classroom.

Most instruments have answers provided. In some cases, where there is no one correct response, the range of possible answers is indicated. All of these may be easily masked when reproducing the questions for assessment purposes.

The instruments for each objective have been arranged in order of difficulty. Since difficulty is dependent upon the experience of students, this order may not be relevant in a specific class. In the final analysis, it is the teacher who is the best judge of the suitability of each instrument for students in a class.

This pool of instruments can be electronically stored or kept in printed form. A simple code has been developed to assist in identifying the types of questions and to facilitate retrieval. It is alpha-numeric with the first group of three symbols used to indicate the section, the topic, and the sub-topic. The next group consists of four digits, identifying the objective within the sub-topic and the number of the instrument relating to that objective. The final group consists of two letters, identifying the type of stimulus used (C for concrete material, D for diagram, V for verbal) and the form of the response (M for multiple choice, R for written answer, S for sketch or diagram). Thus NWE 0302 DR from the arithmetic strand can be translated as:

N - Numeration	(Section)
W - Whole Numbers	(Topic)
E - Estimation	(Sub-topic)
03 - Objective #3	(Objective/number under NWE)
02 - Instrument #2	(Instrument number related to Objective NWE 03)
D - Diagram	(Type of stimulus)
R - Written Answer	(Form of response)

Use of the Pool

It is important that this pool of instruments be considered a supplement to the resources already available to teacher; it should not be treated as the only supply of assessment materials. Direct observation of students during learning and practice activities should continue to contribute a major portion of assessment data throughout the Junior Division. Teachers who have already accumulated files of questions for specific objectives may wish to cut up these pages and add particular instruments to their own supply. Conversely, good questions in the teachers' files may be added to this pool and the code numbers and format altered to include them. In either case, the resulting collection will be a comprehensive resource for designing assessment activities to serve a wide range of purposes.

(a) Instructional Uses

The pool can be used for instructional purposes as well as assessment. The objectives developed could be compared with those used in board documents and modifications made in either or both lists. Some of the instruments may be appropriate as models for demonstration or discussion during lessons. It is important that students have some experience with the variety of formats and styles of questioning used in the pool before they encounter them in a testing situation.

(b) Survey Tests

Because most of the instruments in the pool can be answered quickly and scored easily, they are particularly useful for tests designed to cover a large amount of material. The beginning of a school year or of a new term is a good time to identify strengths and weaknesses of an entire class. Tests of this kind require a large number of instruments matching the topics or objectives that the teacher believes should have been learned before. Having identified areas of general strength or difficulty, the teacher can then alter the program to meet the needs revealed by the test results. Performance profiles of individual students can be prepared using data from survey test, usually supported by a personalized screening test using different instruments from the pool. The

results of such survey tests should not be recorded as achievement tests. The end of term or near the end of a school year are also appropriate times to use a survey test to provide data on which to base a review program or provide useful information to a new teacher.

Principals or other supervisory officials may use the pool to determine the effectiveness of the mathematics program in a number of classes or in several schools. Again, the results obtained from such surveys should be confirmed by other evidence such as direct observation of the students in the classrooms before major decisions are made.

(c) Achievement Tests

When used in conjunction with other sources, the pool has enough depth and variety of questions on each objective to permit designing tests to determine the level of pupil achievement in specified topics. Records of topic by topic achievement are of immediate value to the teacher in choosing tasks that will maintain feelings of success for each pupil. They can also be passed on to other teachers, helping them to plan work at appropriate levels.

Achievement tests on work taught over a period of time, i.e., a month, term, or year, are useful only when students are to be compared with each other, perhaps for grouping purposes, or in assessing the effectiveness of the program. Data from such tests can be used to support the teacher's judgement in communicating pupil progress to parents.

(d) Tests for Diagnostic Purposes

To obtain full value for the time spent doing any test, the teacher should always examine the results for information that can be used to benefit each student. Thus, every test or examination could be labelled diagnostic. However, current propaganda suggests that real 'diagnostic tests unfailingly allow teachers to pinpoint difficulties and apply effective remedies. It is not that simple. Pencil and paper tests do not always reveal gaps in understanding or deficiencies in skills. The best source of data for diagnosis is direct observation of the student engaged in a mathematical activity.

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Properties	Applications

Objective — Given a set of whole numbers less than ten thousand, the student will identify a specific property of the numbers in that set.

	Instrument	Correct Response
NWP 0101 VM	The counting sequence 775, 770, 765 shows (A) counting forward by tens (B) counting backward by tens (C) counting forward by fives (D) counting backward by fives _____	D
NWP 0102 VM	The numbers 542, 543, 544 are all (A) greater than 541 (B) less than 541 (C) greater than 542 (D) less than 542 _____	A
NWP 0103 VM	The numbers, 7395, 7397, 7399 are (A) all odd (B) all even (C) odd and even (D) neither odd nor even _____	A
NWP 0104 VM	The numbers, 758, 756, 754 are (A) all odd (B) all even (C) odd and even (D) neither odd nor even _____	B

	Instrument	Correct Response
NWP 0105 VM	The numbers, 5559, 5562, 5565 are all divisible by (A) 12 (B) 9 (C) 6 (D) 3 ____	D
NWP 0106 VM	The numbers, 858, 864, 870 are all multiples of (A) 4 (B) 6 (C) 8 (D) 9 ____	B
NWP 0107 VM	The numbers, 2870, 2863, 2856 all have a factor of (A) 3 (B) 7 (C) 9 (D) 11 ____	B

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Properties	Applications

Objective — Given a specific property of a whole number less than ten thousand, the student will identify a set of numbers having that property.

	Instrument	Correct Response
NWP 0201 VM	Which sequence lists only numbers that are less than 987? (A) 987, 988, 989, ... (B) 987, 986, 985, ... (C) 986, 987, 988, ... (D) 986, 985, 984, ... _____	D
NWP 0202 VM	Which sequence lists only numbers that are greater than 4093? (A) 4093, 4094, 4095, ... (B) 4093, 4092, 4091, ... (C) 4094, 4095, 4096, ... (D) 4094, 4093, 4092, ... _____	C
NWP 0203 VM	Which sequence lists only even numbers? (A) 753, 754, 755, ... (B) 753, 755, 757, ... (C) 754, 755, 756, ... (D) 754, 756, 758, ... _____	D

	Instrument	Correct Response
NWP 0204 VR	List three consecutive even whole numbers. _____	0, 2, 4, or 6, 8, 10, or ...
NWP 0205 VM	Which sequence lists only odd numbers? (A) 4616, 4615, 4614, ... (B) 4616, 4614, 4612, ... (C) 4615, 4613, 4611, ... (D) 4615, 4612, 4609, ... _____	C
NWP 0206 VR	List three consecutive odd whole numbers. _____	1, 3, 5, or ...
NWP 0207 VM	Which sequence lists only numbers that are multiples of 9? (A) ..., 414, 423, 431, ... (B) ..., 585, 589, 593, ... (C) ..., 288, 297, 306, ... (D) ..., 684, 693, 703, ... _____	C
NWP 0208 VR	List three consecutive multiples of 7. _____	0, 7, 14, or ...
NWP 0209 VM	Which list contains only numbers that are divisible by 8? (A) 440, 444, 448 (B) 768, 776, 784 (C) 248, 252, 256 (D) 824, 830, 836 _____	B

	Instrument	Correct Response
NWP 0210 VR	List three consecutive multiples of 6. _____	0, 6, 12, or ...
NWP 0211 VM	Which list contains only numbers that have a common factor of 10? (A) 5550, 5555, 5560 (B) 5550, 5560, 5570 (C) 5550, 5565, 5580 (D) 5550, 5575, 5600 _____	B
NWP 0212 VR	List three whole numbers that have a common factor of 3. _____	0, 3, 6, or ...
NWP 0213 VM	Which list contains only prime numbers? (A) 17, 19, 21 (B) 29, 31, 33 (C) 39, 41, 43 (D) 37, 41, 43 _____	D
NWP 0214 VR	Write the next three prime numbers after 3. _____	5, 7, 11
NWP 0215 VM	Which list contains only composite numbers? (A) 42, 43, 44 (B) 23, 26, 29 (C) 32, 35, 38 (D) 29, 33, 37 _____	C

	Instrument	Correct Response
NWP 0216 VR	List three composite numbers. _____	4, 6, 8, or ...
NWP 0217 VM	Which list contains only square numbers? (A) 2, 4, 6 (B) 4, 8, 12 (C) 6, 12, 18 (D) 9, 16, 25 ____	D
NWP 0218 VR	List the next three square numbers after 4. _____	9, 16, 25

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Properties	Applications

Objective — Given two or more properties of a whole number less than one hundred thousand, the student will identify a number having those properties.

	Instrument	Correct Response
NWP 0301 VM	Which number is between 456 and 723? (A) 456 (B) 465 (C) 723 (D) 732 _____	B
NWP 0302 VR	Give an example of a number that is between 1036 and 936. _____	1035, or 1034, ..., or 937
NWP 0303 VM	Which number is less than or equal to 4444? (A) 4544 (B) 4455 (C) 4445 (D) 4444 _____	D
NWP 0304 VR	Give an example of a number that is greater than or equal to 7091. _____	7091, or 7902, or ...

	Instrument	Correct Response
NWP 0305 VM	Which number is equal to or greater than 1084? (A) 1083 (B) 998 (C) 1091 (D) 1000 _____	C
NWP 0306 VR	Give an example of an odd number that is less than 5740. _____	5739, or 5737, or ...
NWP 0307 VM	Which number is greater than 5073 and odd? (A) 8005 (B) 5008 (C) 5074 (D) 5071 _____	A
NWP 0308 VR	Give an example of an even number that is greater than 4000. _____	4002, or 4004, or ...
NWP 0309 VM	Which one of the following is an even number between 7826 and 8549? (A) 6287 (B) 7826 (C) 8549 (D) 8458 _____	D

	Instrument	Correct Response
NWP 0310 VR	Give an example of an odd number that is between 13 003 and 12 987. _____	13 001, or 12 999, or ..., 12 989
NWP 0311 VM	Which one of these numbers is less than 783 and a multiple of 3? (A) 783 (B) 816 (C) 528 (D) 379 ____	C
NWP 0312 VR	Write a number that is less than 444 and divisible by 4. _____	440, or 436, or ...
NWP 0313 VM	Which number is greater than 639 and divisible by 9? (A) 639 (B) 702 (C) 594 (D) 872 ____	B
NWP 0314 VR	Write a multiple of 8 that is greater than 5616. _____	5624, or 5632, or ...

	Instrument	Correct Response
NWP 0315 VM	Which number is between 300 and 400, and is a multiple of 7? (A) 303 (B) 417 (C) 266 (D) 392 _____	D
NWP 0316 VR	Write a multiple of 6 that is between 100 and 200. _____	102, or 108, or ..., 198
NWP 0317 VM	Which number is divisible by both 4 and 9? (A) 728 (B) 738 (C) 756 (D) 764 _____	C
NWP 0318 VR	Write a number that is a multiple of both 3 and 8. _____	24, or 48, or 72, or ...
NWP 0319 VM	Which number is a multiple of 5, and is divisible by 7? (A) 265 (B) 315 (C) 485 (D) 635 _____	B

	Instrument	Correct Response
NWP 0320 VR	Write a multiple of 7 that is divisible by 6.	42, or 84, or 168, or ...
NWP 0321 VR	Write a composite number less than 200. _____	Composite numbers such as 198, 196, 195
NWP 0322 VR	Write a composite number that is between 190 and 195. _____	192, 194
NWP 0323 VM	Which one of these is a composite number less than 140 or greater than 161? (A) 140 (B) 139 (C) 161 (D) 169 _____	D
NWP 0324 VR	Write a prime number that is greater than 100 or less than 80. _____	Prime numbers such as 73, 79, or 101, 103

	Instrument	Correct Response
NWP 0325 VM	Which number is less than 200 and a square number? (A) 225 (B) 128 (C) 125 (D) 121 _____	D
NWP 0326 VR	Write a square number that is less than 100. _____	81, or 64, or ...

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Properties	Applications

Objective — Given a whole number less than ten thousand, the student will identify two or more specific properties of that number.

	Instrument	Correct Response
NWP 0401 VM	Which statement describes the number 6000? (A) It is between 6000 and 7000 (B) It is between 5000 and 6000 (C) It is between 6500 and 7500 (D) It is between 5500 and 6500 _____	D
NWP 0402 VM	Which statement describes the number 2468? (A) It is greater than 2400 and odd (B) It is less than 2400 and even (C) It is greater than 2400 and even (D) It is less than 2400 and odd _____	C
NWP 0403 VM	Which statement describes the number 809? (A) It is greater than 810 and odd (B) It is less than 810 and even (C) It is greater than 810 and even (D) It is less than 810 and odd _____	D
NWP 0404 VM	Which statement describes the number 9002? (A) It is between 8000 and 9000, and odd (B) It is between 8000 and 9000, and even (C) It is between 9000 and 10 000, and odd (D) It is between 9000 and 10 000, and even _____	D

	Instrument	Correct Response
NWP 0405 VM	Which statement describes the number 2211? (A) It is less than 2200 and a multiple of 9 (B) It is less than 2200 and a multiple of 3 (C) It is greater than 2200 and a multiple of 9 (D) It is greater than 2200 and a multiple of 3 _____	D
NWP 0406 VM	Which statement describes the number 7544? (A) It is greater than 7500 and divisible by 6 (B) It is greater than 7500 and divisible by 8 (C) It is less than 7500 and divisible by 6 (D) It is less than 7500 and divisible by 8 _____	B
NWP 0407 VM	Which statement describes the number 5946? (A) It is between 5800 and 5900, and a multiple of 9 (B) It is between 5800 and 5900, and a multiple of 6 (C) It is between 5900 and 6000, and a multiple of 9 (D) It is between 5900 and 6000, and a multiple of 6 _____	D

	Instrument	Correct Response
NWP 0408 VR	List three factors of the number 60. _____ _____ _____	Three of 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30 and 60
NWP 0409 VR	List four factors of the number 48. _____ _____ _____	Four of 1, 2, 3, 4, 6, 8, 12, 16, 24, and 48
NWP 0410 VR	List all the factors of the number 60. _____ _____ _____	1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, and 60
NWP 0411 VR	List all the factors of the number 48. _____ _____ _____	1, 2, 3, 4, 6, 8, 12, 16, 24, and 48

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Properties	Applications

Objective — Given a set of whole numbers less than ten thousand, the student will identify two or more specific properties of the numbers.

	Instrument	Correct Response
NWP 0501 VM	Which statement describes a common property of the numbers in the sequence 8000, 8001, 8002, ..., 8099? (A) They are all between 8000 and 9000 (B) They are all between 8000 and 8099 (C) They are all between 7999 and 8099 (D) They are all between 7999 and 9000 _____	D
NWP 0502 VM	Which statement describes a common property of the numbers in the sequence 874, 872, 870,...? (A) They are all even numbers less than 874 (B) They are all odd numbers less than 874 (C) They are all even numbers less than 876 (D) They are all odd numbers less than 876 _____	C

	Instrument	Correct Response
NWP 0503 VM	Which statement describes a common property of the numbers in the sequence 6809, 6811, 6813, ...? (A) They are all even numbers greater than 6807 (B) They are all odd numbers greater than 6807 (C) They are all even numbers greater than 6809 (D) They are all odd numbers greater than 6809 _____	B
NWP 0504 VM	Which statement describes a common property of the numbers in the sequence 4620, 4615, 4610, ...? (A) They are all multiples of 10 less than 4625 (B) They are all multiples of 10 greater than 4625 (C) They are all multiples of 5 less than 4625 (D) They are all multiples of 5 greater than 4625 _____	C
NWP 0505 VM	Which statement describes the numbers 701, 703, 705, 707, 709? (A) They are all even numbers betwen 701 and 709 (B) They are all odd numbers between 701 and 709 (C) They are all even numbers between 700 and 710 (D) They are all odd numbers between 700 and 710 _____	D

	Instrument	Correct Response
NWP 0506 VM	Which statement describes the numbers 1188, 1191, 1194, 1197? (A) They are all between 1188, and 1198 and divisible by 6 (B) They are all between 1188 and 1198 and divisible by 3 (C) They are all between 1187 and 1199 and divisible by 6 (D) They are all between 1187 and 1199 and divisible by 3 _____	D
NWP 0507 VM	Which statement describes the numbers 47, 53, 59, 61, 67, 71? (A) They are all composite numbers between 47 and 71 (B) They are all prime numbers between 47 and 71 (C) They are all composite numbers between 45 and 72 (D) They are all prime numbers between 45 and 72 _____	D

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Properties	Applications

Objective — Given two or more specific properties of a whole number less than one hundred thousand, the student will identify all numbers having those properties.

	Instrument	Correct Response
NWP 0601 VM	Which list contains numbers that are between 276 and 287? (A) 276, 277, 278, ..., 287 (B) 276, 277, 278, ..., 286 (C) 277, 278, 279, ..., 287 (D) 277, 278, 279, ..., 286. ____	D
NWP 0602 VR	List the whole numbers that are between 8211 and 8216. _____	8212, 8213, 8214, 8215
NWP 0603 VR	Which list contains even numbers less than 5631? (A) 5629, 5627, 5625 (B) 5630, 5628, 5626 (C) 5631, 5633, 5625 (D) 5632, 5634, 5636 ____	B
NWP 0604 VM	Which list contains odd numbers greater than 534? (A) 532, 530, 528 (B) 533, 531, 529 (C) 535, 537, 539 (D) 536, 538, 540 ____	C

	Instrument	Correct Response
NWP 0605 VM	Which list contains multiples of 5 less than 417? (A) 420, 425, 430 (B) 420, 415, 410 (C) 415, 420, 425 (D) 415, 410, 405 _____	D
NWP 0606 VM	Which list contains numbers that are greater than 720 and divisible by 9? (A) 729, 738, 747 (B) 729, 720, 711 (C) 720, 729, 738 (D) 720, 711, 702 _____	A
NWP 0607 VM	List the prime numbers that are less than 30. _____ _____	29, 23, 19, 17, 13, 11, 7, 5, 3, 2
NWP 0608 VM	Which list contains only odd numbers between 5679 and 5686? (A) 5679, 5681, 5683, 5685 (B) 5680, 5682, 5684, 5686 (C) 5681, 5683, 5685 (D) 5682, 5684, 5686 _____	C
NWP 0609 VR	List the even numbers that are between 10 764 and 10 769. _____	10 766, 10 768

	Instrument	Correct Response
NWP 0610 VM	Which list contains numbers between 603 and 618 and divisible by 3? (A) 603, 606, 609, 612, 615, 618 (B) 603, 606, 609, 612, 615 (C) 606, 609, 612, 615, 618 (D) 606, 609, 612, 615 _____	D
NWP 0611 VR	List the multiples of 6 between 7890 and 7925. _____ _____	7896, 7902, 7908, 7914 7920
NWP 0612 VR	List the composite numbers between 100 and 110. _____ _____	102, 104, 105, 106, 108
NWP 0613 VM	Which list contains only square numbers less than 101? (A) 96, 98, 100 (B) 92, 96, 100 (C) 84, 92, 100 (D) 64, 81, 100 _____	D
NWP 0614 VM	Which list contains all the square numbers between 36 and 122? (A) 36, 49, 64, 81, 100, 121 (B) 36, 49, 64, 81, 100 (C) 49, 64, 81, 100, 121 (D) 49, 64, 81, 100 _____	C

	Instrument	Correct Response
NWP 0615 VR	List all the square numbers that are between 5 and 50. _____ _____	9, 16, 25, 36, 49

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Properties	Applications

Objective — Given a whole number less than one hundred thousand, the student will identify specific properties of that number.

	Instrument	Correct Response
NWP 0701 VM	Which one of the following statements describes the number 46 280? (A) It is odd (B) It is even (C) It is both odd and even (D) It is neither odd nor even ____	B
NWP 0702 VM	Which one of the following statements describes the number 10 001? (A) It is odd (B) It is even (C) It is both odd and even (D) It is neither odd nor even ____	A
WP 0703 VM	The number 796 is (A) a multiple of 8 (B) a multiple of 6 (C) a multiple of 3 (D) a multiple of 2 ____	D
NWP 0704 VM	List all the whole numbers that will divide 26 evenly. _____ _____	1, 2, 13, and 26

	Instrument	Correct Response
NWP 0705 VM	The number 1677 is (A) divisible by 2 (B) divisible by 3 (C) divisible by 4 (D) divisible by 5 _____	B
NWP 0706 VM	The number 5752 is (A) a multiple of 9 (B) a multiple of 8 (C) a multiple of 7 (D) a multiple of 3 _____	B
NWP 0707 VM	The number 7250 is divisible by (A) 8 (B) 6 (C) 5 (D) 4 _____	C
NWP 0708 VM	The number 259 is divisible by (A) 9 (B) 7 (C) 6 (D) 3 _____	B
NWP 0709 VM	The number 4426 is a multiple of (A) 9 (B) 8 (C) 6 (D) 2 _____	D

	Instrument	Correct Response
NWP 0710 VM	The number 7587 has (A) 5 as a factor (B) 6 as a factor (C) 7 as a factor (D) 9 as a factor _____	D
NWP 0711 VM	The number 3410 has (A) 4 as a factor (B) 6 as a factor (C) 8 as a factor (D) 10 as a factor _____	D
NWP 0712 VM	The number 139 is (A) square (B) composite (C) even (D) prime _____	D
NWP 0713 VM	Which one of the following statements describes the number 5327? (A) It is 1 less than 5427 (B) It is 10 less than 5427 (C) It is 100 less than 5427 (D) It is 1000 less than 5427 _____	C
NWP 0714 VM	Which one of the following statements describes the number 3008? (A) It is 1 greater than 2908 (B) It is 10 greater than 2908 (C) It is 100 greater than 2908 (D) It is 1000 greater than 2908 _____	C

	Instrument	Correct Response
NWP 0715 VM	Which one of the following statements describes the number 79 112? (A) It is 1 greater than 79 012 (B) It is 10 greater than 79 012 (C) It is 100 greater than 79 012 (D) It is 1000 greater than 79 012 _____	C

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Properties	Applications

Objective — Given a specific property of a whole number less than one hundred thousand, the student will identify a number having that property.

	Instrument	Correct Response
NWP 0801 VR	Write a 5 digit whole number. _____	Whole numbers between 9999 and 100 000
NWP 0802 VM	Which one of these numbers is less than 4276? (A) 4367 (B) 4312 (C) 4284 (D) 4267 ____	D
NWP 0803 VR	Give an example of a number that is less than 9123. _____	9122, or 9121, or ...
NWP 0804 VM	Which one of these numbers is greater than 65 341? (A) 64 346 (B) 64 389 (C) 65 341 (D) 66 341 ____	D

	Instrument	Correct Response
NWP 0805 VM	Which one of these numbers is even? (A) 37 159 (B) 44 627 (C) 55 330 (D) 96 669 _____	C
NWP 0806 VR	Give an example of an even number. _____	0, or 2, or 4, or ...
NWP 0807 VM	Which one of these numbers is odd? (A) 1000 (B) 4444 (C) 5432 (D) 9999 _____	D
NWP 0808 VM	Which one of these numbers is a multiple of 2? (A) 235 (B) 241 (C) 796 (D) 227 _____	C
NWP 0809 VM	Give an example of a number that is divisible by 2. _____	0, or 2, or 4, or ...

	Instrument	Correct Response
NWP 0810 VM	Which one of these numbers is divisible by 3? (A) 436 (B) 472 (C) 589 (D) 555 ____	D
NWP 0811 VM	Give an example of a number that is a multiple of 3. _____	0, or 3, or 6, or ...
NWP 0812 VM	Which one of these numbers is a multiple of 4? (A) 2530 (B) 4902 (C) 6850 (D) 8576 ____	D
NWP 0813 VR	Give an example of a number that is a multiple of 4. _____	0, or 4, or 8, or ...
NWP 0814 VM	Which one of these numbers is divisible by 5? (A) 3457 (B) 4052 (C) 5558 (D) 6795 ____	D

	Instrument	Correct Response
NWP 0815 VR	Give an example of a number that is divisible by 5. _____	0, or 5, or 10, or ...
NWP 0816 VM	Which one of these numbers has 6 as a factor? (A) 2112 (B) 3556 (C) 4138 (D) 6284 _____	A
NWP 0817 VR	Give an example of a number that is a multiple of 6. _____	0, or 6, or 12, or ...
NWP 0818 VM	Which one of these numbers is divisible by 7? (A) 1885 (B) 2657 (C) 3493 (D) 4811 _____	C
NWP 0819 VR	Give an example of a number that has 7 as a factor. _____	0, or 7, or 14, or ...

	Instrument	Correct Response
NWP 0820 VM	Which one of these numbers is a multiple of 8? (A) 2716 (B) 3574 (C) 5974 (D) 8328 _____	D
NWP 0821 VM	Give an example of a number that has 8 as a factor. _____	0, or 8, or 16, or ...
NWP 0822 VM	Which one of these numbers has 9 as a factor? (A) 2356 (B) 3822 (C) 6873 (D) 7794 _____	D
NWP 0823 VR	Give an example of a whole number that is evenly divisible by 9. _____	0, or 9, or 18, or ...
NWP 0824 VM	Which one of these numbers has 10 as a factor? (A) 1001 (B) 2345 (C) 3106 (D) 7310 _____	D

	Instrument	Correct Response
NWP 0825 VR	Give an example of a number that has 10 as a factor. _____	0, or 10, or 20, or ...
NWP 0826 VM	Which one of these numbers is a prime number? (A) 32 (B) 33 (C) 37 (D) 39 _____	C
NWP 0827 VR	Give an example of a prime number. _____	Prime numbers such as 2, 3, 5
NWP 0828 VM	Which one of these numbers is a composite number? (A) 23 (B) 27 (C) 29 (D) 31 _____	B
NWP 0829 VR	Give an example of a composite number. _____	Numbers such as 4, 6, 8, 9

	Instrument	Correct Response
NWP 0830 VM	Which one of these whole numbers comes just after 679? (A) 780 (B) 779 (C) 689 (D) 680 _____	D
NWP 0831 VM	Write the whole number that comes just after 60 999. _____	61 000
NWP 0832 VM	Which one of these numbers comes just before 3070? (A) 2969 (B) 2970 (C) 3060 (D) 3069 _____	D
NWP 0833 VR	Write the whole number that comes just before 9999. _____	9998
NWP 0834 VM	Which one of these numbers is 10 less than 714? (A) 604 (B) 614 (C) 713 (D) 704 _____	D

	Instrument	Correct Response
NWP 0835 VR	Write the number that is 10 less than 71 207. _____	71 197
NWP 0836 VM	Which one of these numbers is 10 greater than 7896? (A) 8896 (B) 7996 (C) 7906 (D) 7895 _____	C
NWP 0837 VR	Write the number that is 10 more than 70 091. _____	70 101
NWP 0838 VM	Which one of these numbers is 100 less than 7893? (A) 6893 (B) 7793 (C) 7892 (D) 7883 _____	B
NWP 0839 VR	Write the number that is 100 less than 50 000. _____	49 900

	Instrument	Correct Response
NWP 0840 VM	Which one of these numbers is 100 greater than 701? (A) 702 (B) 711 (C) 801 (D) 802 _____	C
NWP 0841 VR	Write the number that is 100 greater than 32 089. _____	32 189
NWP 0842 VM	Which one of these numbers is 1000 less than 20 876? (A) 20 876 (B) 20 776 (C) 19 876 (D) 20 875 _____	C
NWP 0843 VR	Write down the number that is 1000 less than 100 000. _____	99 000
NWP 0844 VM	Which one of these numbers is 1000 greater than 9718? (A) 19 718 (B) 10 718 (C) 9818 (D) 9728 _____	B

	Instrument	Correct Response
NWP 0845 VR	Write down the number that is 1000 greater than 73 764. _____	74 764
NWP 0846 VR	Give an example of a square number. _____	1, or 4, or 9, or ...

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Properties	Applications

Objective — Given two whole numbers less than one million, the student will identify the middle number.

	Instrument	Correct Response
NWP 0901 VM	The middle number between 3018 and 3020 is (A) 3017 (B) 3019 (C) 3021 (D) 3023 _____	B
NWP 0902 VR	The middle number between 123 678 and 123 676 is _____	123 677
NWP 0903 VM	The middle number between 6007 and 6011 is (A) 6008 (B) 6009 (C) 6010 (D) 6012 _____	B
NWP 0904 VR	The middle number between 67 999 and 67 995 is _____	67 997

	Instrument	Correct Response
NWP 0905 VM	The middle number between 6785 and 6795 is (A) 6789 (B) 6790 (C) 6791 (D) 6792 _____	B
NWP 0906 VR	The middle number between 456 722 and 456 712 is _____	456 717
NWP 0907 VM	The middle number between 6789 and 6809 is (A) 6794 (B) 6799 (C) 6804 (D) 6805 _____	B
NWP 0908 VR	The middle number between 35 000 and 34 980 is _____	34 990
NWP 0909 VM	The middle number between 8642 and 8842 is (A) 8732 (B) 8762 (C) 8742 (D) 8812 _____	C

	Instrument	Correct Response
NWP 0910 VR	The middle number between 567 093 and 566 893 is _____	566 993
NWP 0911 VM	The middle number between 7008 and 9008 is (A) 7208 (B) 7608 (C) 8008 (D) 8408 _____	C
NWP 0912 VR	The middle number between 62 573 and 60 573 is _____	61 573

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Representation	Applications

Objective — Given a whole number less than one hundred thousand, the student will count forward or backward from that number.

	Instrument	Correct Response
NWR 0101 VM	Counting forward by ones from 6730, the next three numbers are (A) 7730, 8730, and 9730 (B) 6731, 6732, and 6733 (C) 6740, 6750, and 6760 (D) 6830, 6930, and 7030 _____	B
NWR 0102 VR	Counting forward by ones from 5008, the next three numbers are _____, _____, and _____	5009, 5010, and 5011
NWR 0103 VM	Counting backward by ones from 4002, the next three numbers are (A) 4002, 3002, and 2002 (B) 3902, 3802, and 3702 (C) 3992, 3982, and 3972 (D) 4001, 4000, and 3999 _____	D
NWR 0104 VR	Counting backward by ones from 5100, the next three numbers are _____, _____, and _____	5099, 5098, and 5097

	Instrument	Correct Response
NWR 0105 VM	Counting forward by twos from 2710, the next three numbers are (A) 2712, 2714, and 2716 (B) 2730, 2750, and 2770 (C) 2910, 3110, and 3310 (D) 4710, 6710, and 8710 _____	A
NWR 0106 VR	Counting forward by twos from 698, the next three numbers are _____, _____, and _____	700, 702 and 704
NWR 0107 VM	Counting backward by twos from 8001, the next three numbers are (A) 6001, 4001, and 2001 (B) 7801, 7601, and 7401 (C) 7981, 7961, and 7941 (D) 7999, 7997, and 7995 _____	D
NWR 0108 VR	Counting backward by twos from 1234, the next three numbers are _____, _____, and _____	1232, 1230, and 1228
NWR 0109 VM	Counting forward by fives from 9998, the next three numbers are (A) 14 998, 19 998, and 24 998 (B) 10 003, 10 008, and 10 013 (C) 10 048, 10 098, and 11 048 (D) 10 498, 10 998, and 11 498 _____	B

	Instrument	Correct Response
NWR 0110 VR	Counting forward by fives from 792, the next three numbers are _____, _____, and _____	797, 802, and 807
NWR 0111 VM	Counting backward by fives from 87 004, the next three numbers are (A) 82 004, 77 004, and 72 004 (B) 86 504, 86 004, and 81 004 (C) 86 954, 86 904, and 86 854 (D) 86 999, 86 994, and 86 989 _____	D
NWR 0112 VR	Counting backward by fives from 6971, the next three numbers are _____, _____, and _____	6966, 6961, and 6956
NWR 0113 VM	Counting forward by tens from 1975, the next three numbers are (A) 2975, 3975, and 4975 (B) 2075, 2175, and 2275 (C) 1985, 1995, and 2005 (D) 1976, 1977, and 1978 _____	C
NWR 0114 VR	Counting forward by tens from 992, the next three numbers are _____, _____, and _____	1002, 1012, and 1022

	Instrument	Correct Response
NWR 0115 VM	Counting backward by tens from 9403, the next three numbers are (A) 8403, 7403, and 6403 (B) 9303, 9203, and 9103 (C) 9393, 9383, and 9373 (D) 9402, 9401, and 9400 _____	C
NWR 0116 VR	Counting backward by tens from 75 007, the next three numbers are _____, _____, and _____	74 997, 74 987, and 74 977
NWR 0117 VM	Counting forward by hundreds from 3076, the next three numbers are (A) 4076, 5076, and 6076 (B) 3176, 3276, and 3376 (C) 3086, 3096, and 3106 (D) 3077, 3078, and 3079 _____	B
NWR 0118 VR	Counting forward by hundreds from 35 491, the next three numbers are _____, _____, and _____	35 591, 35 691, and 35 791
NWR 0119 VM	Counting backward by hundreds from 4940, the next three numbers are (A) 3940, 2940, and 1940 (B) 4840, 4740, and 4640 (C) 4930, 4920, and 4910 (D) 4939, 4938, and 4937 _____	B

	Instrument	Correct Response
NWR 0120 VR	Counting backward by hundreds from 60 253, the next three numbers are _____, _____, and _____	60 153, 60 053, and 59 953
NWR 0121 VM	Counting forward by thousands from 8897, the next three numbers are (A) 9897, 10 897, and 11 897 (B) 8997, 9097, and 9197 (C) 8907, 8917, and 8927 (D) 8898, 8899, and 8900 _____	A
NWR 0122 VR	Counting forward by thousands from 8601, the next three numbers are _____, _____, and _____	9601, 10 601, and 11 601
NWR 0123 VM	Counting backward by thousands from 5039, the next three numbers are (A) 4039, 3039, and 2039 (B) 4939, 4839, and 4739 (C) 5029, 5019, and 5009 (D) 5038, 5037, and 5036 _____	A
NWR 0124 VR	Counting backward by thousands from 72 561, the next three numbers are _____, _____, and _____	71 561, 70 561, and 69 561

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Representation	Applications

Objective — Given a counting sequence of three or more whole numbers less than one hundred thousand, the student will identify the counting rule (forward or backward by 1's, 2's, 5's, 10's, 100's, 1000's)

	Instrument	Correct Response
NWR 0201 VM	The counting sequence 675, 676, 677 shows (A) counting forward by twos (B) counting backward by twos (C) counting forward by ones (D) counting backward by ones _____	C
NWR 0202 VR	Describe the counting rule used to form the sequence 76 083, 76 084, 76 085. _____	Counting forward by ones
NWR 0203 VM	The counting sequence 3000, 2999, 2998 shows (A) counting forward by twos (B) counting backward by twos (C) counting forward by ones (D) counting backward by ones _____	D
NWR 0204 VR	Describe the counting rule used to form the sequence 456, 455, 454. _____	Counting backward by ones

	Instrument	Correct Response
NWR 0205 VM	The counting sequence 2079, 2081, 2083 shows (A) counting forward by ones (B) counting backward by ones (C) counting forward by twos (D) counting backward by twos _____	C
NWR 0206 VR	Describe the counting rule used for the sequence 40 688, 40 690, 40 692. _____	Counting forward by twos
NWR 0207 VM	The counting sequence 983, 981, 979 shows (A) counting forward by ones (B) counting backward by ones (C) counting forward by twos (D) counting backward by twos _____	D
NWR 0208 VR	Describe the counting rule used for the sequence 3275, 3273, 3271. _____	Counting backward by twos
NWR 0209 VM	The counting sequence 1248, 1253, 1258 shows (A) counting forward by tens (B) counting backward by tens (C) counting forward by fives (D) counting backward by fives _____	C

	Instrument	Correct Response
NWR 0210 VR	Describe the counting rule used to form the sequence 6997, 7002, 7007. _____	Counting forward by fives
NWR 0211 VM	The counting sequence 775, 770, 765 shows (A) counting forward by tens (B) counting backward by tens (C) counting forward by fives (D) counting backward by fives _____	D
NWR 0212 VR	Describe the counting rule used to form the sequence 4003, 3998, 3993. _____	Counting backward by fives
NWR 0213 VM	The counting sequence 8790, 8800, 8810 shows (A) counting forward by hundreds (B) counting backward by hundreds (C) counting forward by tens (D) counting backward by tens _____	C
NWR 0214 VR	Describe the counting rule used to form the sequence 2349, 2359, 2369. _____	Counting forward by tens

	Instrument	Correct Response
NWR 0215 VM	The counting sequence 607, 597, 587 shows (A) counting forward by hundreds (B) counting backward by hundreds (C) counting forward by tens (D) counting backward by tens _____	D
NWR 0216 VR	Describe the counting rule used to form the sequence 7564, 7554, 7544. _____	Counting backward by tens
NWR 0217 VM	The counting sequence 5893, 5993, 6093 shows (A) counting forward by tens (B) counting backward by tens (C) counting forward by hundreds (D) counting backward by hundreds _____	C
NWR 0218 VR	Describe the counting rule used to form the sequence 31 004, 31 104, 31 204. _____	Counting forward by hundreds
NWR 0219 VM	The counting sequence 736, 636, 536 shows (A) counting forward by tens (B) counting backward by tens (C) counting forward by hundreds (D) counting backward by hundreds _____	D

	Instrument	Correct Response
NWR 0220 VR	Describe the counting rule used to form the sequence 7186, 7086, 6986. _____	Counting backward by hundreds
NWR 0221 VM	The counting sequence 6004, 7004, 8004 shows (A) counting forward by hundreds (B) counting backward by hundreds (C) counting forward by thousands (D) counting backward by thousands ____	C
NWR 0222 VR	Describe the counting rule used to form the sequence 56 789, 57 789, 58 789. _____	Counting forward by thousands
NWR 0223 VM	The counting sequence 45 098, 44 098, 43 098 shows (A) counting forward by hundreds (B) counting backward by hundreds (C) counting forward by thousands (D) counting backward by thousands ____	D
NWR 0224 VR	Describe the counting rule used to form the sequence 77 896, 76 896, 75 896. _____	Counting backward by thousands

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Representation	Skills

Objective — Given a whole number less than one hundred thousand, the student will identify both the preceding and succeeding numbers when counting by 1's, 2's, 5's, 10's, 100's, 1000's.

	Instrument	Correct Response
NWR 0301 VM	Counting by ones, the numbers coming just before and just after 2680 are (A) 1680 and 3680 (B) 2580 and 2780 (C) 2670 and 2690 (D) 2679 and 2681 _____	D
NWR 0302 VR	Counting by ones, the numbers coming just before and just after 60 709 are _____ and _____	60 708 and 60 710
NWR 0303 VM	Counting by twos, the numbers coming just before and just after 7971 are (A) 5971 and 9971 (B) 7771 and 8171 (C) 7951 and 7991 (D) 7969 and 7973 _____	D
NWR 0304 VR	Counting by twos, the numbers coming just before and just after 684 are _____ and _____	682 and 686

	Instrument	Correct Response
NWR 0305 VM	Counting by fives, the numbers coming just before and just after 6829 are (A) 1829 and 11 829 (B) 6329 and 7329 (C) 6779 and 6879 (D) 6824 and 6834 _____	D
NWR 0306 VR	Counting by fives, the numbers coming just before and just after 23 678 are _____ and _____	23 673 and 23 683
NWR 0307 VM	Counting by tens, the numbers coming just before and just after 5840 are (A) 4840 and 6840 (B) 5740 and 5940 (C) 5830 and 5850 (D) 5839 and 5841 _____	C
NWR 0308 VR	Counting by tens, the numbers coming just before and just after 703 are _____ and _____	693 and 713
NWR 0309 VM	Counting by hundreds, the numbers coming just before and just after 3456 are (A) 2456 and 4456 (B) 3356 and 3556 (C) 3446 and 3466 (D) 3455 and 3457 _____	B

	Instrument	Correct Response
NWR 0310 VR	Counting by hundreds, the numbers coming just before and just after 68 099 are _____ and _____	67 999 and 68 199
NWR 0311 VM	Counting by thousands, the numbers coming just before and just after 7000 are (A) 6999 and 7001 (B) 6990 and 7010 (C) 6900 and 7100 (D) 6000 and 8000 _____	D
NWR 0312 VR	Counting by thousands, the numbers coming just before and just after 9999 are _____ and _____	8999 and 10 999

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Representation	Understanding

Objective — Given the place values of specified digits in a whole number less than one million, the student will identify that number.

	Instrument	Correct Response
NWR 0401 VM	Which one of the following has the digit 6 in the thousands place? (A) 67 431 (B) 76 528 (C) 80 364 (D) 92 675 _____	B
NWR 0402 VR	Write a six-digit whole number that has the digit 3 in the ten thousands place. _____	132 456, or ...

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Representation	Understanding

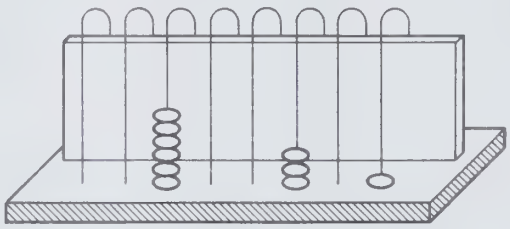
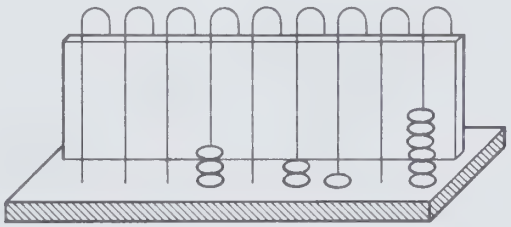
Objective — Given a whole number less than one million, the student will identify the place values of specified digits.

	Instrument	Correct Response
NWR 0501 VM	The place value of the digit 4 in 64 820 is (A) ones (B) tens (C) hundreds (D) thousands _____	D
NWR 0502 VR	What is the place value of the digit 0 in 804 723? _____	Ten thousands
NWR 0503 VM	Which one of the following statements does not apply to 56 708? (A) The place value of the digit 5 is hundred thousands (B) The place value of the digit 6 is thousands (C) The place value of the digit 7 is hundreds (D) The place value of the digit 8 is ones _____	A

	Instrument	Correct Response
NWR 0504 VR	State the place value for each digit in 3021. _____ _____ _____ _____	3: thousands 0: hundreds 2: tens 1: ones

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Representation	Understanding

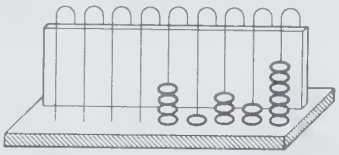
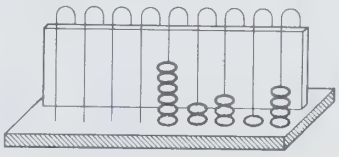
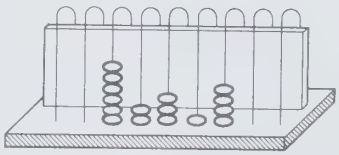
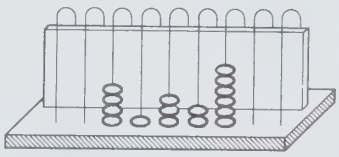
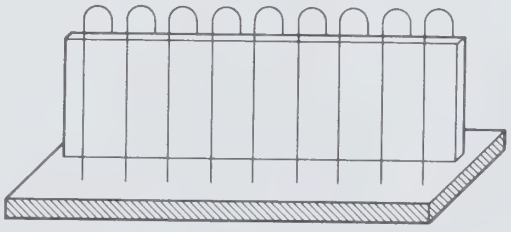
Objective — Given a place-value representation (e.g., concrete model, diagram, description) of a whole number less than one million, the student will identify that number.

	Instrument	Correct Response
NWR 0601 DM	This picture shows  (A) 136 (B) 631 (C) 10 306 (D) 600 301	D
NWR 0602 DR	Write the whole number represented in this picture.  _____	302 106

	Instrument	Correct Response
NWR 0603 VM	Which one of the following numerals represents 8 thousands, 9 hundreds, and 7 ones? (A) 7098 (B) 7908 (C) 8097 (D) 8907 ____	D
NWR 0604 VR	Write the number described by 8 hundred thousands, 3 hundreds, and 1 one. _____	800 301

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Representation	Understanding

Objective — Given a whole number less than one million, the student will identify a place-value representation of that number.

	Instrument	Correct Response
NWR 0701 DM	Which one of these represents 62 314? (A)  (B)  (C)  (D) 	B
NWR 0702 DS	Draw beads on this picture to represent 305 420. 	

	Instrument	Correct Response
NWR 0703 VM	Which one of the following describes 809 056? (A) 8 thousands, 9 hundreds, 5 tens, 6 ones (B) 8 ten thousands, 9 thousands, 5 tens, 6 ones (C) 8 hundred thousands, 9 thousands, 5 tens, 6 ones (D) 8 hundred thousands, 9 ten thousands, 5 tens, 6 ones _____	C
NWR 0704 VR	Write the value of each digit in 605 310 beginning with 6 hundred thousands, ... _____ _____ _____ _____ _____ _____	6: hundred thousands 0: ten thousands 5: thousands 3: hundreds 1: ten 0: ones

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Representation	Understanding

Objective — Given the expanded form of a whole number less than one million, the student will identify that number.

	Instrument	Correct Response
NWR 0801 VR	Write the number represented by (5 x 1000) + (7 x 100) + (8 x 10) + (6 x 1) _____	5786
NWR 0802 VR	The expression 300 + 70 + 8 represents (A) 873 (B) 837 (C) 387 (D) 378 _____	D
NWR 0803 VR	Write the number represented by 30 000 + 5 000 + 200 + 6 _____	35 206
NWR 0804 VM	The expression (8 x 1000) + (7 x 10) + (5 x 1) represents (A) 875 (B) 8075 (C) 8105 (D) 8705 _____	B

	Instrument	Correct Response
NWR 0805 VR	Write the number represented by (5 x 100 000) + (4 x 10 000) + (8 x 1000) + (3 x 100) + (9 x 1). _____	548 309

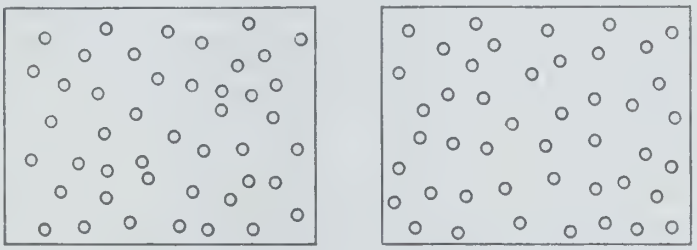
STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Representation	Understanding

Objective — Given a whole number less than one million, the student will express it in expanded form.

	Instrument	Correct Response
NWR 0901 VM	An expanded form for 2070 is (A) 200 + 7 (B) 200 + 70 (C) 2000 + 7 (D) 2000 + 70 ____	D
NWR 0902 VR	Write 65 380 in expanded form. _____ _____ _____ _____	(6 x 10 000) + (5 x 1 000) + (3 x 100) + (8 x 10) or 60 000 + 5 000 + 300 + 80
NWR 0903 VM	An expanded form for 807 is (A) (8 x 10) + 7 (B) (8 x 10) + 70 (C) (8 x 100) + 7 (D) (8 x 100) + 70 ____	C

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Estimation	Applications

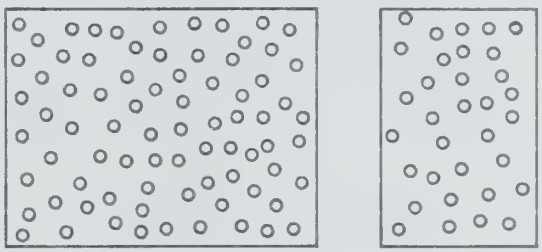
Objective — Given the representations (e.g., concrete model, diagram, description) of two whole numbers less than one million, the student will make a reasonable estimate of the sum of those numbers.

	Instrument	Correct Response
NWE 0101 DM	Which is the best estimate for the sum of the circles in the two sets shown below?  (A) 65 (B) 90 (C) 115 (D) 140 ____	B
NWE 0102 DM	Which of the following is the best estimate for the sum of the numbers labelled by X and Y in the number line shown below? (A) 1200 (B) 1600 (C) 2000 (D) 2400 ____	B

	Instrument	Correct Response
NWE 0103 VM	Which is the best estimate for the sum of 9876 and 5678? (A) 12 000 (B) 15 500 (C) 19 000 (D) 22 500 _____	B

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Estimation	Applications

Objective — Given the representations (e.g., concrete model, diagram, description) of two whole numbers less than one million, the student will make a reasonable estimate of the difference between those numbers.

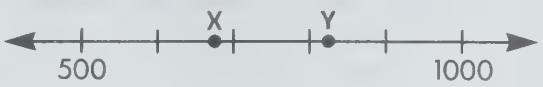
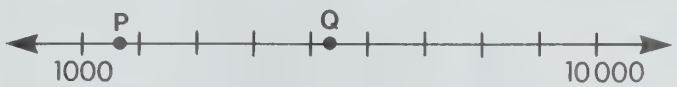
	Instrument	Correct Response
NWE 0201 DM	Which is the best estimate for the difference between the numbers of circles in the two sets shown below?  (A) 15 (B) 30 (C) 45 (D) 60 ____	C
NWE 0202 DM	Which of the following is the best estimate for the difference between the numbers labelled by X and Y in the number line shown below? (A) 50 (B) 150 (C) 250 (D) 350 ____	C

	Instrument	Correct Response
NWE 0203 VM	Which is the best estimate for the difference between 4896 and 8032? (A) 1000 (B) 2000 (C) 3000 (D) 4000 _____	C

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Estimation	Applications

Objective

Given the representations (e.g., concrete model, diagram, description) of two whole numbers less than one million, the student will make a reasonable estimate of the number halfway between those numbers.

	Instrument	Correct Response
NWE 0301 DM	Which of the following is the best estimate for the number halfway between the numbers labelled by X and Y in the number line shown below?  (A) 250 (B) 500 (C) 750 (D) 1000 ____	C
NWE 0302 DR	Make a good estimate for the number halfway between the numbers labelled by P and Q in the number line shown below.  _____	3200 to 3900

	Instrument	Correct Response
NWE 0303 VM	Which of the following is the best estimate for the number halfway between 3459 and 6011? (A) 1500 (B) 3000 (C) 4500 (D) 6000 _____	C

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Estimation	Skills

Objective — Given the result of rounding a whole number less than ten thousand to the nearest of ten, hundred, or thousand, the student will identify the range of possible values for that number.

	Instrument	Correct Response
NWE 0401 VM	When rounding to the nearest 10, which of the following round to 240? (A) numbers between 231 and 241 (B) numbers between 233 and 243 (C) numbers between 236 and 244 (D) numbers between 237 and 247 ____	C
NWE 0402 VR	List three whole numbers that result in 1370 when they are rounded to the nearest 10. _____	Three numbers between and including 1365 and 1374
NWE 0403 VM	When rounding to the nearest 100, which of the following round to 1000? (A) numbers between 945 and 1045 (B) numbers between 950 and 1050 (C) numbers between 955 and 1055 (D) numbers between 960 and 1065 ____	B

	Instrument	Correct Response
NWE 0404 VR	List two whole numbers that result in 2500 when they are rounded to the nearest 100. _____	Numbers between and including 2450 and 2549
NWE 0405 VR	List two whole numbers that result in 5000 when they are rounded to the nearest 1000. _____	Numbers between and including numbers 4500 and 5499

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Whole Numbers	Estimation	Skills

Objective — Given a whole number less than one hundred thousand, the student will round that number to the nearest ten, hundred or thousand.

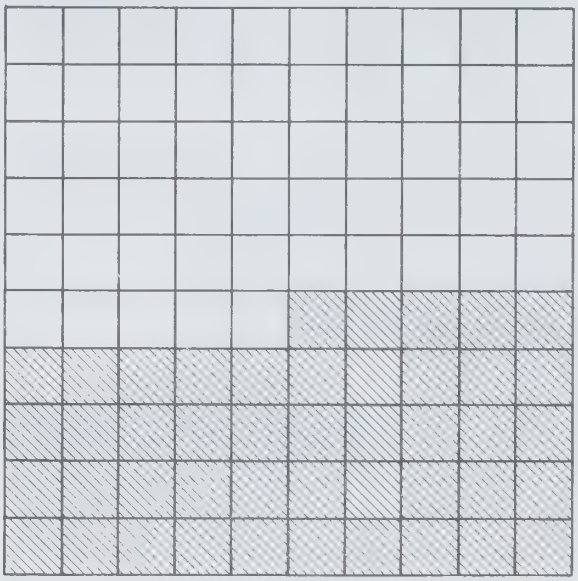
	Instrument	Correct Response
NWE 0501 VM	Rounded to the nearest ten, 376 is (A) 360 (B) 370 (C) 380 (D) 400 _____	C
NWE 0502 VR	Round 62 084 to the nearest 10. _____	62 080
NWE 0503 VM	Rounded to the nearest hundred, 8501 is (A) 8400 (B) 8500 (C) 8600 (D) 9000 _____	B
NWE 0504 VR	Round 63 453 to the nearest 100. _____	63 500

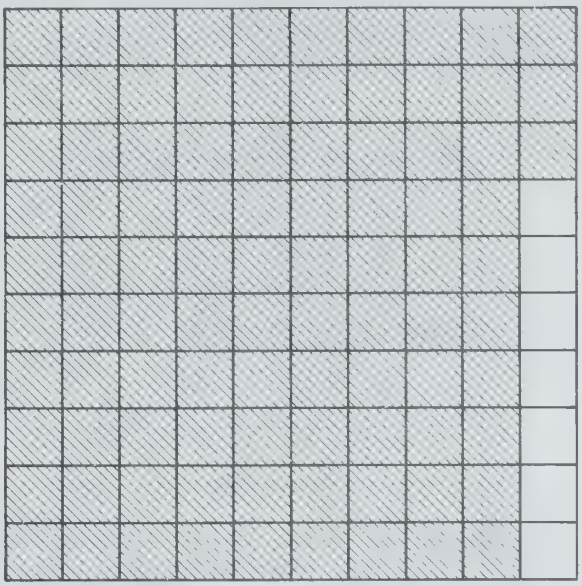
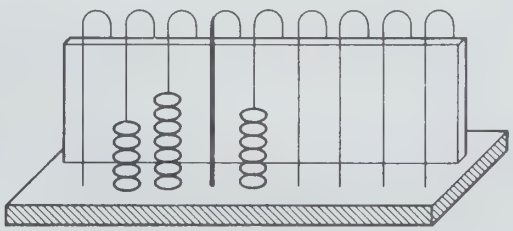
	Instrument	Correct Response
NWE 0505 VM	Rounded to the nearest thousand, 81 400 is (A) 80 000 (B) 81 000 (C) 82 000 (D) 83 000 _____	B
NWE 0506 VR	Round 9600 to the nearest thousand. _____	10 000

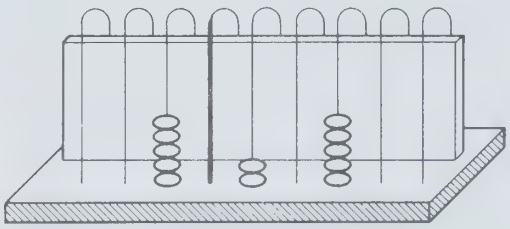
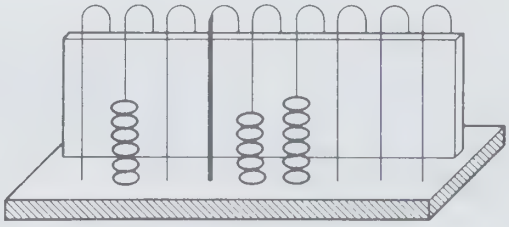
STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Decimals	Representation	Understanding

Objective — Given a concrete model or diagram representing a decimal up to and including thousandths, the student will identify the decimal.

	Instrument	Correct Response
NDR 0101 DM	The decimal represented by the shaded area in the diagram below is (A) 0.3 (B) 0.4 (C) 0.6 (D) 0.7 ____	D
NDR 0102 DR	Write the decimal represented by the shaded area in the diagram below. _____	0.2

	Instrument	Correct Response
NDR 0103 DM	The decimal represented by the shaded area in the diagram below is  (A) 0.34 (B) 0.43 (C) 0.45 (D) 0.54 ____	C

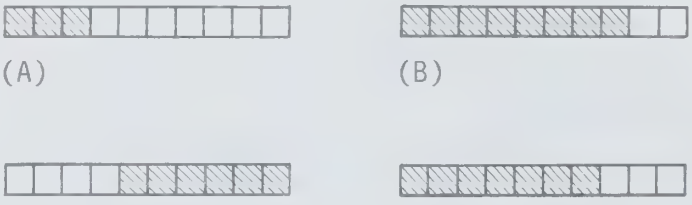
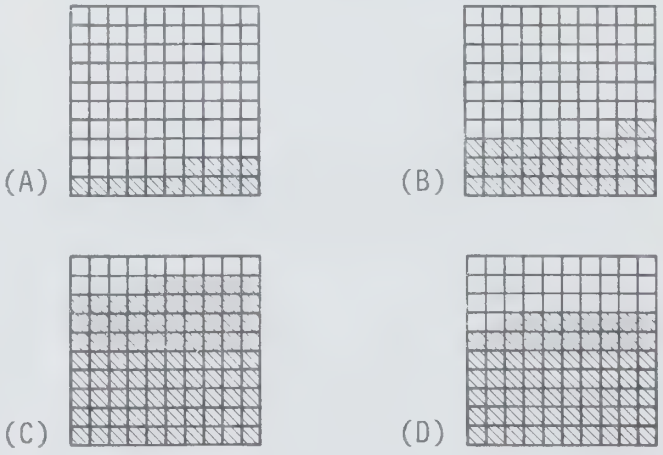
	Instrument	Correct Response
NDR 0104 VR	Write the decimal represented by the shaded area in the diagram below.  _____	0.93
NDR 0105 DM	The diagram below shows an arrangement of beads on an abacus. The heavy bar is used to separate the whole number from the fraction. What number is represented by this arrangement of beads?  (A) 0.576 (B) 5.76 (C) 57.6 (D) 576.0 ____	C

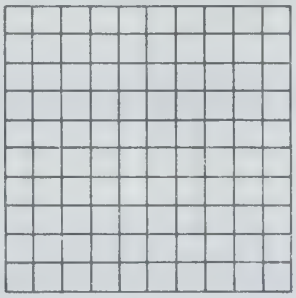
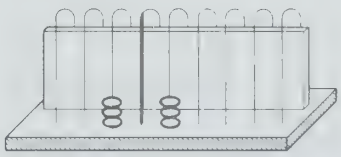
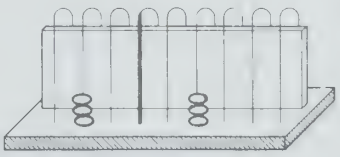
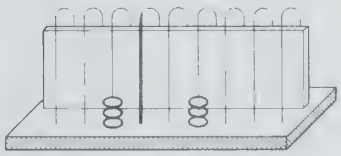
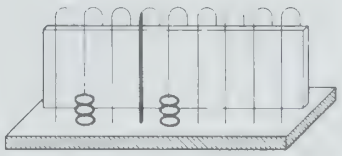
	Instrument	Correct Response
NDR 0106 DR	The diagram below shows an arrangement of beads on an abacus. The heavy bar is used to separate the whole number from the fraction. What number is represented by this arrangement of beads?  _____	5.205
NDR 0107 DR	The diagram below shows an arrangement of the beads on an abacus. The heavy bar represents the decimal point. What number is represented by this arrangement of beads?  _____	60.56
NDR 0108 VM	Which number represents 3 tenths, 5 hundredths, 7 thousandths? (A) 357.0 (B) 35.7 (C) 3.57 (D) 0.357 ____	D

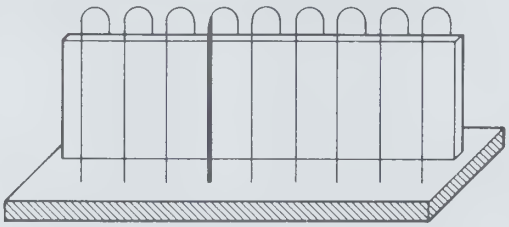
	Instrument	Correct Response
NDR 0109 VR	Write the number described by: 7 tens, 2 ones, and 8 tenths. _____	72.8
NDR 1110 VM	Which number represents 3 tens and 4 hundredths? (A) 0.3004 (B) 3.004 (C) 30.04 (D) 300.4 _____	C
NDR 0111 VM	Which number represents 6 ones, 2 tenths, 6 thousandths? (A) 6206 (B) 620.6 (C) 62.06 (D) 6.206 _____	D

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Decimals	Representation	Understanding

Objective Given a decimal up to thousandths, the student will identify a concrete model or diagram of the decimal.

	Instrument	Correct Response
NDR 0201 VM	Which one of the following diagrams has a shaded area that represents 0.7?  (A) (B) (C) (D) ____	D
NDR 0202 VM	Which one of the following diagrams has a shaded area that represents 0.68?  (A) (B) (C) (D) ____	D

	Instrument	Correct Response
NDR 0203 VS	Shade the given grid to show the meaning of 0.07. 	7 squares shaded
NDR 0204 DM	The diagrams below show different arrangements of beads on an abacus. The heavy bar is used to separate the whole number from the fraction. Which one represents 30.3?  (A)  (B)  (C)  (D) ____	D

	Instrument	Correct Response
NDR 0205 DS	Draw beads on this picture of an abacus to represent 6.305. The heavy bar is used to separate the whole number from the fraction. 	

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Decimals	Representation	Understanding

Objective — Given an expanded form of a decimal up to and including thousandths, the student will identify the number.

	Instrument	Correct Response
NDR 0301 VM	The expression 200 + 60 + 5 + 0.3 represents (A) 2.653 (B) 26.53 (C) 265.3 (D) 2653 _____	C
NDR 0302 VM	The expression $(9 \times \frac{1}{10}) + (7 \times \frac{1}{100}) + (3 \times \frac{1}{1000})$ represents (A) 973 (B) 97.3 (C) 9.73 (D) 0.973 _____	D
NDR 0303 VR	Write the numeral for the number expressed as $(1 \times 10) + (5 \times 1) + (8 \times \frac{1}{10}) + (4 \times \frac{1}{100})$ _____	15.84

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Decimals	Representation	Understanding

Objective — Given a decimal up to and including thousandths, the student will express that decimal in expanded form.

	Instrument	Correct Response
NDR 0401 VM	The expanded form for the numeral 40.08 is (A) $(4 \times 1) + (8 \times \frac{1}{10})$ (B) $(4 \times 1) + (8 \times \frac{1}{100})$ (C) $(4 \times 10) + (8 \times \frac{1}{10})$ (D) $(4 \times 10) + (8 \times \frac{1}{100})$ _____	D
NDR 0402 VR	Write 26.53 in expanded form. _____ _____ _____ _____	(2×10) $+ (6 \times 1)$ $+ (5 \times \frac{1}{10})$ $+ (3 \times \frac{1}{100})$

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Decimals	Representation	Understanding

Objective — Given the place value up to and including thousandths of specified digits in a decimal, the student will identify the decimal.

	Instrument	Correct Response
NDR 0501 VM	Which number has the digit 8 in the thousandths place? (A) 6.538 (B) 4.807 (C) 2.086 (D) 0.124 ____	A
NDR 0502 VR	Write a number that has the digit 4 in the hundredths place. _____	Various responses
NDR 0503 VM	Which number has 7 tens, 8 ones, and 9 tenths? (A) 789 (B) 78.9 (C) 7.89 (D) 0.789 ____	B
NDR 0504 VR	Write a number having 9 thousands, 7 tens, 1 one, 5 hundredths, and 4 thousandths. _____	9071.054

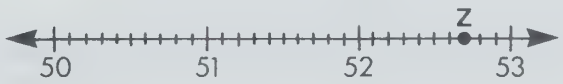
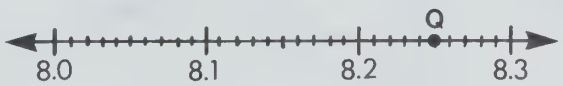
STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Decimals	Representation	Understanding

Objective Given a decimal up to and including thousandths, the student will identify the place value of specified digits.

	Instrument	Correct Response
NDR 0601 VM	The place value of the digit 6 in 5.068 is (A) ones (B) tenths (C) hundredths (D) thousandths _____	C
NDR 0602 VR	What is the place value of the digit 3 in 729.3? _____	Tenths
NDR 0603 VR	State the place value of each digit in 3246.95. _____ _____ _____ _____ _____ _____	3: thousands 2: hundreds 4: tens 6: ones 9: tenths 5: hundredths

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Decimals	Representation	Skills

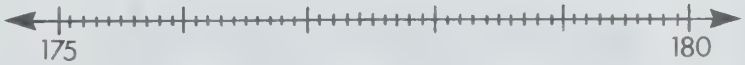
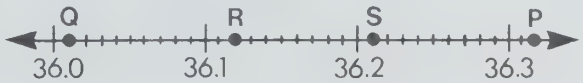
Objective — Given a point on a number line the student will identify the corresponding decimal.

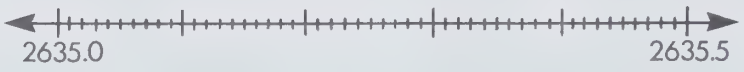
	Instrument	Correct Response
NDR 0701 DM	Which one of these numbers corresponds to the point labelled Z?  (A) 58.2 (B) 57.2 (C) 52.8 (D) 52.7 ____	D
NDR 0702 DR	Write the number that corresponds to the point labelled W. _____	4709.2
NDR 0703 DM	Which one of these numbers corresponds to the point labelled Q?  (A) 8.52 (B) 8.53 (C) 8.35 (D) 8.25 ____	D

	Instrument	Correct Response
NDR 0704 DM	Which one of these numbers corresponds to the point labelled Y? (A) 2.008 (B) 2.007 (C) 2.080 (D) 2.070 _____	B
NDR 0705 DR	Write the number that corresponds to the point labelled X. _____	333.303

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Decimals	Representation	Skills

Objective Given a decimal number, the student will identify the corresponding point on a number line.

	Instrument	Correct Response
NDR 0801 DM	Which one of these points corresponds to 5.4? ____	Z
NDR 0802 VS	Put a dot on the number line to show 179.8.  	
NDR 0803 DM	Which one of these points corresponds to the number 36.21?  ____	S

	Instrument	Correct Response
NDR 0804 DS	Put a dot on the number line to show 2635.27.  	
NDR 0805 DM	Which one of these points corresponds to 87.029? ____	Z
NDR 0806 DM	Which one of these points corresponds to the number 9.603? ____	P

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Decimals	Representation	Skills

Objective — Given a decimal number, the student will identify the written or spoken form.

	Instrument	Correct Response
NDR 0901 VM	The written form of 36.7 is (A) thirty-six and seven hundredths (B) thirty-six and seven tenths (C) three and sixty-seven hundredths (D) three and sixty-seven thousandths _____	B
NDR 0902 VR	Write 5008.8 in words. _____ _____ _____	Five thousand eight and eight tenths
NDR 0903 DM	The written form of 0.07 is (A) seven ten thousandths (B) seven thousandths (C) seven hundredths (D) seven tenths _____	C

	Instrument	Correct Response
NDR 0904 VR	Write 956.48 in words. _____ _____ _____	Nine hundred fifty-six and forty-eight hundredths
NDR 0905 VM	The written form of 29.005 is (A) twenty-nine and five ten thousandths (B) twenty-nine and five thousandths (C) twenty-nine and five hundredths (D) twenty-nine and five tenths ____	B

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Decimals	Notation	Skills

Objective — Given the written or spoken form of a decimal number, the student will identify it.

	Instrument	Correct Response
NDR 1001 VM	Six tenths is (A) 0.006 (B) 0.06 (C) 0.6 (D) 6.0 _____	C
NDR 1002 VR	Write the decimal number eight hundred seven and three tenths. _____	807.3
NDR 1003 VM	Twenty-five and thirty-four hundredths is (A) 2534 (B) 253.4 (C) 25.34 (D) 2.534 _____	C

	Instrument	Correct Response
NDR 1004 VR	Write the decimal number seven thousand eight hundred one and nine hundredths. _____	7801.09
NDR 1005 DM	Eight hundred seven thousandths is (A) 800.007 (B) 80.007 (C) 8.007 (D) 0.807 ____	D
NDR 1006 VR	Write the decimal number six hundred fifteen and three hundred fifty-two thousandths. _____	615.352
NDR 1007 DM	Twenty-nine and three thousandths is (A) 29.3 (B) 29.03 (C) 29.003 (D) 29.0003 ____	C

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Decimals	Properties	Skills

Objective — Given a decimal up to and including thousandths, the student will identify order properties.

	Instrument	Correct Response
NDP 0101 VM	Which statement describes 63.8? (A) It is greater than 63.8 (B) It is less than 63.8 (C) It is greater than 63.9 (D) It is less than 63.9 ____	D
NDP 0102 VM	Which statement describes 5.02? (A) It is greater than 5.020 (B) It is less than 5.020 (C) It is greater than 5.019 (D) It is less than 5.019 ____	C
NDP 0103 VM	Which statement describes 8.31? (A) it is greater than 8.310 (B) It is less than 8.310 (C) It is equal to 8.310 (D) It is not equal to 8.310 ____	C
NDP 0104 VM	Which statement describes 6.702? (A) It is 0.001 greater than 6.602 (B) It is 0.01 greater than 6.602 (C) It is 0.1 greater than 6.602 (D) It is 1 greater than 6.602 ____	C

	Instrument	Correct Response
NDP 0105 VM	Which statement describes 7.343? (A) It is 0.001 less than 7.353 (B) It is 0.01 less than 7.353 (C) It is 0.1 less than 7.353 (D) It is 1 less than 7.353 _____	B
NDP 0106 VM	Which statement describes 0.983? (A) It is 0.001 greater than 0.982 (B) It is 0.01 greater than 0.982 (C) It is 0.1 greater than 0.982 (D) It is 1 greater than 0.982 _____	A

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Decimals	Properties	Skills

Objective — Given an order property, the student will identify a decimal which has the property.

	Instrument	Correct Response
NDP 0201 VM	Which one of these decimals is less than 6.87? (A) 8.76 (B) 7.86 (C) 6.87 (D) 6.78 ____	D
NDP 0202 VR	Give an example of a decimal that is less than 724.078. _____	724.077, or 724.076, or ...
NDP 0203 VM	Which one of these decimals is greater than 75.7? (A) 75.08 (B) 75.67 (C) 75.70 (D) 75.72 ____	D
NDP 0204 VR	Give an example of a decimal that is greater than 2456.506. _____	2456.507, or 2456.508, or ...

	Instrument	Correct Response
NDP 0205 VM	Which one of these numbers represents 29.75? (A) 29.075 (B) 29.705 (C) 29.750 (D) 29.755 _____	C
NDP 0206 VM	Which one of these numbers is 0.1 less than 7.835? (A) 6.835 (B) 7.735 (C) 7.834 (D) 7.825 _____	B
NDP 0207 VR	What is the number that is 0.1 less than 846.09? _____	845.99
NDP 0208 VR	What number is 0.1 greater than 6755.9? _____	6756.0
NDP 0209 VR	What is the number that is 0.01 less than 5003.2? _____	5003.19

	Instrument	Correct Response
NDP 0210 VM	Which one of these numbers is 0.01 greater than 5.604? (A) 5.605 (B) 5.614 (C) 5.704 (D) 6.604 _____	B
NDP 0211 VR	What is the number that is 0.01 greater than 432.123? _____	432.133
NDP 0212 VM	Which one of these numbers is 0.001 less than 6.879? (A) 5.879 (B) 6.779 (C) 6.869 (D) 6.878 _____	D
NDP 0213 VR	What is the number that is 0.001 less than 200.14? _____	200.139

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Decimals	Properties	Applications

Objective Given an order property of a decimal, the student will identify a set of numbers having that property.

	Instrument	Correct Response
NDP 0301 VM	Which list contains only numbers that are less than 56.78? (A) 56.78, 56.77, 56.76 (B) 56.78, 56.79, 56.80 (C) 56.77, 56.76, 56.75 (D) 56.77, 56.78, 56.79 _____	C
NDP 0302 VR	List three numbers less than 23.41. _____, _____, and _____	23.40, 23.39, and 23.38, or 23, 22, and 21, or ...
NDP 0303 VM	Which list contains only numbers that are greater than 5.432? (A) 5.432, 5.431, 5.430 (B) 5.432, 5.433, 5.434 (C) 5.433, 5.434, 5.435 (D) 5.433, 5.432, 5.431 _____	C

	Instrument	Correct Response
NDP 0304 VR	List three numbers greater than 604.0. _____, _____, and _____	604.1, 604.2, and 604.3, or 605, 606, and 607, or ...

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Decimals	Properties	Applications

Objective — Given a set of decimals, the student will identify order properties of the decimals.

	Instrument	Correct Response
NDP 0401 VM	Which one of the following statements describes a common property of the numbers 9876.34, 9876.33, 9876.32? (A) They are all less than 9876.34 (B) They are all greater than 9876.34 (C) They are all less than 9876.341 (D) They are all greater than 9876.341 _____	C
NDP 0402 VM	Which one of the following statements describes a common property of the numbers 3.22, 3.222, 3.2222? (A) They are all less than 3.2 (B) They are all greater than 3.2 (C) They are all less than 3.22 (D) They are all greater than 3.22 _____	B
NDP 0403 VM	Which one of the following statements describes a common property of the numbers 70.7, 70.70, 70.700? (A) They are all less than 70.7 (B) They are all greater than 70.7 (C) They are all equal to 70.7 (D) They are all different than 70.7 _____	C

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Decimals	Estimation	Skills

Objective — Given a number line representation of a decimal, the student will make a reasonable estimate of the decimal.

	Instrument	Correct Response
NDE 0101 DM	The best estimate for the number that corresponds to the point labelled X is (A) 5.0 (B) 5.3 (C) 5.6 (D) 5.9 ____	C
NDE 0102 DR	Estimate to the nearest tenth, the number that corresponds to the point labelled Y. _____	886.6 to 886.9
NDE 0103 DM	The best estimate for the number that corresponds to the point labelled P is (A) 37.20 (B) 37.23 (C) 37.26 (D) 37.29 ____	C

	Instrument	Correct Response
NDE 0104 DR	Estimate to the nearest hundredth, the number that corresponds to the point labelled Q. _____	6800.32 to 6800.34
NDE 0105 DM	The best estimate for the number that corresponds to the point labelled Z is (A) 70.301 (B) 70.303 (C) 70.305 (D) 70.307 ____	C
NDE 0106 DR	Estimate to the nearest thousandth, the number that corresponds to the point labelled W. _____	5.023 or 5.024

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Decimals	Estimation	Skills

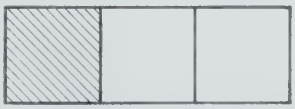
Objective Given a decimal number, the student will round it to a specified value.

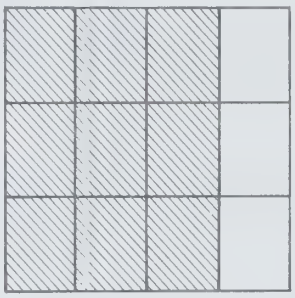
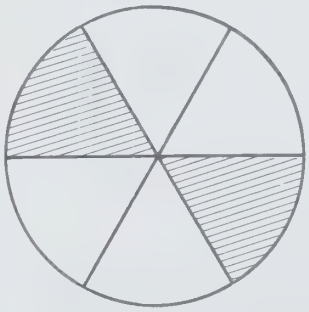
	Instrument	Correct Response
NDE 0201 VM	Rounding to the nearest whole number, 73.4 is (A) 72 (B) 73 (C) 74 (D) 75 _____	B
NDE 0202 VR	Round 1367.478 to the nearest whole number. _____	1367
NDE 0203 VM	Rounding to the nearest tenth, 6.448 is (A) 6.3 (B) 6.4 (C) 6.5 (D) 6.6 _____	B
NDE 0204 VR	Round 896.57 to the nearest tenth. _____	896.6

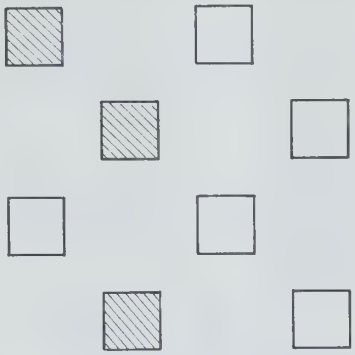
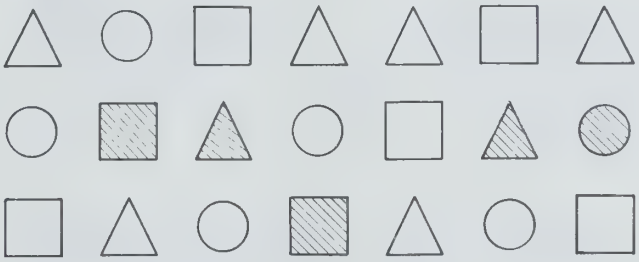
	Instrument	Correct Response
NDE 0205 VM	Rounding to the nearest hundredth, 0.435 is (A) 0.42 (B) 0.43 (C) 0.44 (D) 0.45 _____	C
NDE 0206 VR	Round 300.703 to the nearest hundredth. _____	300.70

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Fractions	Representation	Understanding

Objective Given a concrete model or diagram representing a fraction, the student will identify the fraction.

	Instrument	Correct Response
NFR 0101 DM	The fraction of the strip which is shaded is  (A) $\frac{1}{4}$ (B) $\frac{1}{3}$ (C) $\frac{1}{2}$ (D) $\frac{2}{3}$ ____	B
NFR 0102 DR	Write the fraction of the rectangle which is shaded in the diagram below. _____	$\frac{3}{4}$

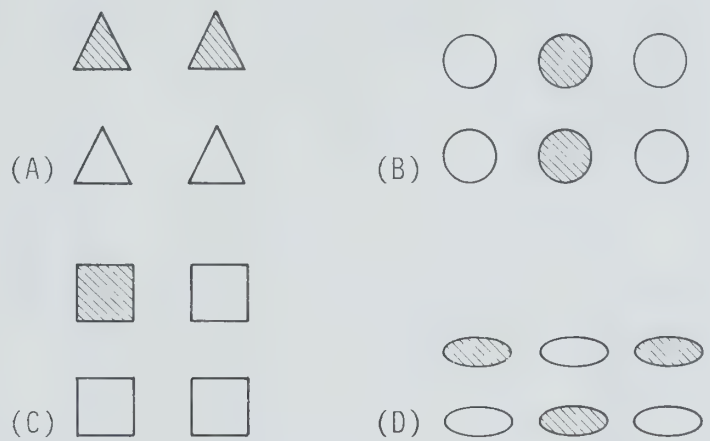
	Instrument	Correct Response
NFR 0103 DM	The fraction of the square which is shaded in the diagram below is  (A) $\frac{3}{12}$ (B) $\frac{1}{3}$ (C) $\frac{9}{12}$ (D) $\frac{2}{3}$ ____	C
NFR 0104 DR	Write the fraction of the circle which is shaded.  _____	$\frac{2}{6}$ or $\frac{1}{3}$
NFR 0105 CR	Give the student 4 white blocks and 2 red blocks. Ask: "Of all these blocks what fraction are white?" _____	$\frac{4}{6}$ or $\frac{2}{3}$

	Instrument	Correct Response
NFR 0106 DM	The fraction of squares that are shaded is  (A) $\frac{1}{4}$ (B) $\frac{3}{8}$ (C) $\frac{3}{5}$ (D) $\frac{5}{8}$ ____	B
NFR 0107 DR	Write the fraction of triangles that are shaded.  _____	$\frac{2}{8}$ or $\frac{1}{4}$

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Numeration	Fractions	Representation	Understanding

Objective Given a fraction, the student will identify a concrete model or diagram of the fraction.

	Instrument	Correct Response
NFR 0201 DM	Which one of the following diagrams has a shaded area that represents $\frac{2}{3}$? (A) (B) (C) (D)	
NFR 0202 VS	Shade the given strip to show the meaning $\frac{2}{10}$ 	

	Instrument	Correct Response
NFR 0203 CR	Give the student 8 blocks. Ask: "Put aside three quarters of the blocks."	
NFR 0204 DM	Which one of the following diagrams shows one-third of the objects shaded? 	B

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Operations	Skills

Objective — Given two whole numbers less than ten thousand, the student will calculate their sum.

	Instrument	Correct Response
RWO 0101 VM	300 + 5 = (A) 3005 (B) 800 (C) 350 (D) 305 ____	D
RWO 0102 VM	37 + 2 = (A) 372 (B) 237 (C) 57 (D) 39 ____	D
RWO 0103 VR	2041 + 8 = _____	2049
RWO 0104 VM	60 + 30 = (A) 9 (B) 36 (C) 63 (D) 90 ____	D

	Instrument	Correct Response
RWO 0105 VR	2512 + 70 = _____	2582
RWO 0106 VM	432 + 43 (A) 862 (B) 772 (C) 475 (D) 862 ____	C
RWO 0107 VR	8 + 81 = _____	89
RWO 0108 VM	5 + 200 = (A) 205 (B) 250 (C) 700 (D) 5200 ____	A
RWO 0109 VR	330 + 400 = _____	730
RWO 0110 VM	3251 + 423 (A) 7481 (B) 7274 (C) 3674 (D) 3494 ____	C
RWO 0111 VR	212 + 75	287

	Instrument	Correct Response
RWO 0112 VM	5400 + 3000 = (A) 5403 (B) 5430 (C) 5700 (D) 8400 _____	D
RWO 0113 VR	25 + 9000 = _____	9025
RWO 0114 VM	5 + 3124 = (A) 8124 (B) 3624 (C) 3174 (D) 3129 _____	D
RWO 0115 VR	2131 + 623	2754
RWO 0116 VM	56 + 4 = (A) 564 (B) 456 (C) 96 (D) 60 _____	D
RWO 0117 VR	3572 + 8 = _____	3580

	Instrument	Correct Response
RWO 0118 VM	687 + 7 = (A) 6877 (B) 1387 (C) 757 (D) 694 _____	D
RWO 0119 VM	680 + 50 = (A) 68 050 (B) 1180 (C) 730 (D) 685 _____	C
RWO 0120 VR	8 + 40 = _____	48
RWO 0121 VM	76 + 15 = (A) 7615 (B) 775 (C) 127 (D) 91 _____	D
RWO 0122 VR	5496 + 87	5583
RWO 0123 VM	8320 + 800 = (A) 832 800 (B) 84 000 (C) 16 320 (D) 9120 _____	D

	Instrument	Correct Response
RWO 0124 VR	460 + 74	534
RWO 0125 VM	6 + 997 = (A) 9913 (B) 1597 (C) 1057 (D) 1003 _____	D
RWO 0126 VR	485 +739	1224
RWO 0127 VM	8 + 4000 = (A) 12 000 (B) 4800 (C) 4080 (D) 4008 _____	D
RWO 0128 VR	576 + 5900 = _____	6476
RWO 0129 VM	7694 +6778 (A) 13 472 (B) 13 462 (C) 14 472 (D) 14 462 _____	C

	Instrument	Correct Response
RWO 0130 VR	4075 + 29	4104

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Operations	Skills

Objective — Given two whole numbers less than one hundred thousand, the student will calculate their difference.

	Instrument	Correct Response
RWO 0201 VM	605 - 5 = (A) 60 (B) 105 (C) 555 (D) 600 ____	D
RWO 0202 VM	68 - 4 = (A) 17 (B) 24 (C) 28 (D) 64 ____	D
RWO 0203 VM	90 - 30 = (A) 3 (B) 6 (C) 60 (D) 87 ____	C
RWO 0204 VR	7028 - 20 = _____	7008

	Instrument	Correct Response
RWO 0205 VM	576 - 41 = (A) 562 (B) 535 (C) 436 (D) 166 _____	B
RWO 0206 VR	549 - 37 = _____	512
RWO 0207 VM	640 - 400 = (A) 24 (B) 60 (C) 240 (D) 600 _____	C
RWO 0208 VR	9684 - 350	9334
RWO 0209 VM	8579 - 456 (A) 4019 (B) 4523 (C) 8123 (D) 8114	C
RWO 0210 VR	1608 - 501 = _____	1107

	Instrument	Correct Response
RWO 0211 VM	29 876 - 6000 = (A) 29 870 (B) 29 816 (C) 29 276 (D) 23 876 _____	D
RWO 0212 VR	1748 - 1640 = _____	108
RWO 0213 VM	78 669 - 2 314 (A) 75 355 (B) 75 455 (C) 76 355 (D) 76 455 _____	C
RWO 0214 VR	87 654 - 7654 = _____	80 000
RWO 0215 VM	60 - 3 = (A) 20 (B) 30 (C) 57 (D) 67 _____	C
RWO 0216 VR	7200 - 8 = _____	7192
RWO 0217 VM	832 - 4 = (A) 838 (B) 836 (C) 828 (D) 826 _____	C

	Instrument	Correct Response
RWO 0218 VM	300 - 20 = (A) 380 (B) 320 (C) 280 (D) 220 ____	C
RWO 0219 VR	80 - 15 = _____	65
RWO 0220 VM	203 - 32 (A) 235 (B) 226 (C) 180 (D) 171 ____	D
RWO 0221 VR	3167 - 78	3089
RWO 0222 VM	700 - 450 = (A) 360 (B) 340 (C) 260 (D) 250 ____	D
RWO 0223 VR	60 000 - 800 = _____	59 200
RWO 0224 VM	9302 - 286 (A) 9116 (B) 9115 (C) 9016 (D) 9015 ____	C

	Instrument		Correct Response
RWO 0225 VR	6002 - 999		5003
RWO 0226 VM	5634 -4700	(A) 1043 (B) 1034 (C) 943 (D) 934 _____	D
RWO 0227 VR	98 401 - 9 000 = _____		89 401
RWO 0228 VM	70 510 - 798	(A) 69 822 (B) 69 812 (C) 69 722 (D) 69 712 _____	D
RWO 0229 VR	90 000 - 789		89 211

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Operations	Skills

Objective — Given two whole numbers one less than ten thousand and one less than one thousand, the student will calculate their product.

	Instrument	Correct Response
RWO 0301 VM	100 x 3 = (A) 3100 (B) 1003 (C) 300 (D) 103 ____	C
RWO 0302 VM	21 x 4 = (A) 421 (B) 241 (C) 84 (D) 48 ____	C
RWO 0303 VR	3024 x 2 = _____	6048
RWO 0304 VM	20 x 30 = (A) 3020 (B) 2030 (C) 600 (D) 500 ____	C
RWO 0305 VR	2413 x 20 = _____	48 260

	Instrument	Correct Response
RWO 0306 VM	321 x 13 (A) 9951 (B) 4173 (C) 1599 (D) 1284 _____	B
RWO 0307 VR	2 x 43 = _____	86
RWO 0308 VM	5 x 100 = (A) 5100 (B) 1005 (C) 500 (D) 105 _____	C
RWO 0309 VR	320 x 300 = _____	96 000
RWO 0310 VM	4201 x 122 (A) 513 620 (B) 512 522 (C) 512 225 (D) 490 562 _____	B
RWO 0311 VR	203 x 32	6496
RWO 0312 VR	43 x 2000 = _____	86 000

	Instrument	Correct Response
RWO 0313 VM	3 x 2312 = (A) 32 312 (B) 23 123 (C) 9636 (D) 6936 ____	D
RWO 0314 VR	1213 x 312	378 456
RWO 0315 VM	60 x 4 = (A) 604 (B) 460 (C) 420 (D) 240 ____	D
RWO 0316 VR	3008 x 5 = _____	15 040
RWO 0317 VM	345 x 6 = (A) 6345 (B) 3456 (C) 2610 (D) 2070 ____	D
RWO 0318 VM	480 x 50 = (A) 50 480 (B) 48 050 (C) 24 000 (D) 20 400 ____	C

	Instrument	Correct Response
RWO 0319 VR	8 x 60 = _____	480
RWO 0320 VM	69 x 43 (A) 4128 (B) 3264 (C) 2967 (D) 2346 _____	C
RWO 0321 VR	4876 x 54	263 304
RWO 0322 VM	2300 x 400 = (A) 2 001 150 (B) 1 280 000 (C) 1 150 200 (D) 920 000 _____	D
RWO 0323 VR	520 x 78	40 560

	Instrument	Correct Response
RWO 0324 VM	9 x 865 = (A) 9865 (B) 8659 (C) 7785 (D) 6165 _____	C
RWO 0325 VM	9 x 5060 = (A) 50 609 (B) 50 400 (C) 45 540 (D) 45 054 _____	C
RWO 0326 VR	845 x 7000 = _____	5 915 000
RWO 0327 VM	1234 x 678 (A) 836 652 (B) 947 712 (C) 897 672 (D) 842 752 _____	A
RWO 0328 VR	8069 x 58	468 002

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Operations	Skills

Objective — Given two whole numbers less than one hundred thousand and a divisor less than one thousand, the student will calculate the quotient, including the remainder where appropriate.

	Instrument	Correct Response
RWO 0401 VM	600 ÷ 2 = (A) 800 (B) 400 (C) 300 (D) 200 ____	C
RWO 0402 VM	3643 ÷ 4 = (A) 943 R0 (B) 913 R3 (C) 910 R3 (D) 900 R3 ____	C
RWO 0403 VR	24 ÷ 3 = _____	8
RWO 0404 VM	60 ÷ 20 = (A) 8 (B) 4 (C) 3 (D) 2 ____	C
RWO 0405 VR	8008 ÷ 40 = _____	200 R8 or 200.2

	Instrument		Correct Response
RWO 0406 VM	$32\overline{)129}$	(A) 5 R14 (B) 5 R4 (C) 4 R3 (D) 4 R1 _____	D
RWO 0407 VR	$56\overline{)22\ 400}$		400
RWO 0408 VM	900 ÷ 300 = (A) 9 (B) 6 (C) 3 (D) 0 _____		C
RWO 0409 VM	$821\overline{)3289}$	(A) 5 R5 (B) 5 R4 (C) 4 R5 (D) 4 R4 _____	C
RWO 0410 VM	50 000 ÷ 500 = (A) 550 (B) 450 (C) 150 (D) 100 _____		D

	Instrument	Correct Response
RWO 0411 VR	$430\overline{)8643}$	20 R43 or 20.1
RWO 0412 VM	5003 ÷ 2 = (A) 2501 R3 (B) 2501 R1 (C) 2500 R3 (D) 2500 R1 _____	B
RWO 0413 VR	90 ÷ 6 = _____	15
RWO 0414 VM	180 ÷ 5 = (A) 36 (B) 30 (C) 26 (D) 13 _____	A
RWO 0415 VM	90 ÷ 20 = (A) 5 R0 (B) 5 R10 (C) 4 R0 (D) 4 R10 _____	D

	Instrument			Correct Response
RWO 0416 VR	$16\overline{)4000}$			250
RWO 0417 VM	$63\overline{)567}$	(A) 19 (B) 14 (C) 9 (D) 4	____	C
RWO 0418 VM	850 ÷ 300 = (A) 3 R50 (B) 3 R250 (C) 2 R50 (D) 2 R250		____	D
RWO 0419 VR	$650\overline{)79\ 950}$			123
RWO 0420 VM	$756\overline{)6048}$	(A) 3 (B) 8 (C) 13 (D) 18	____	B

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Operations	Applications

Objective — Given a word problem involving up to and including three additions, the student will identify a numerical expression leading to the solution of the problem.

	Instrument	Correct Response
RWO 0501 VM	Bill served 72 cupcakes with icing and 8 cupcakes without icing. Which one of the following expressions shows how many cupcakes he served in all? (A) 72 x 8 (B) 72 + 8 (C) 72 - 8 (D) 72 ÷ 8 _____	B
RWO 0502 VM	Which one of the following expressions could be used to solve this problem? Manuel wants to buy a bicycle that costs $100. The sales tax will be $7. How much will he have to pay altogether? (A) 100 - 7 (B) 100 ÷ 7 (C) 100 x 7 (D) 100 + 7 _____	D

	Instrument	Correct Response
RWO 0503 VR	Write a numerical expression that could be used to solve the following problem. Maria is 12 years old now. How old will she be in 6 years? _____	12 + 6
RWO 0504 VM	Which one of the following number sentences could be used to solve this problem? There were 12 elephants in the zoo on January 1st. Four baby elephants were born during January and February. How many elephants are there on March 1st? (A) n = 12 - 4 (B) n = 12 x 4 (C) n = 12 + 4 (D) n = 12 ÷ 4 ____	C
RWO 0505 VR	Write a number sentence using "n" that could be used to solve the following problem. Kris works 4 h in the morning. Kris works 2 h in the afternoon. How long does he work altogether? _____	n = 4 + 2

	Instrument	Correct Response
RWO 0506 VM	Which one of the following number sentences could be used to solve this problem? Renée has 18 dolls at home and her younger sister has 9. How many dolls do they have altogether. (A) n = 18 - 9 (B) n = 18 ÷ 9 (C) n = 18 + 9 (D) n = 18 x 9 _____	C
RWO 0507 VR	Write a number sentence using "n" that could be used to solve the following problem. If Jim has a mass of 120 kg and his brother has a mass of 40 kg, what is their total mass? _____	n = 120 + 40
RWO 0508 VM	Which one of the following expressions could be used to solve this problem? Bert travels 251 km from Toronto to Kingston. He then goes 94 km from Kingston to Smiths Falls and 73 km from Smith Falls to Ottawa. How far does he travel going from Toronto to Ottawa. (A) 251 - 94 - 73 (B) 251 + 94 - 73 (C) 251 - 94 + 73 (D) 251 + 94 + 73 _____	D

	Instrument	Correct Response
RWO 0509 VR	Write an expression that could be used to solve the following problem. Chang has an empty bag. He puts in 10 blue marbles, 20 red marbles, and finally, 15 black marbles. How many marbles has Chang put in the bag? _____	10 + 20 + 15
RWO 0510 VM	Which one of the following expressions could be used to solve this problem? While he was in the major leagues, Babe Ruth hit 714 home runs, 136 triples, and 506 doubles. How many major league hits were for extra bases? (A) 714 + 506 + 136 (B) 714 + 506 - 136 (C) 714 + 136 - 506 (D) 506 + 136 - 714 _____	A
RWO 0511 VR	Write an expression that could be used to solve the following problem. Ron bought a bicycle for $150, a baseball glove for $25, and a watch for $40. How much did he spend in all? _____	150 + 25 + 40

	Instrument	Correct Response
RWO 0512 VM	Which one of the following number sentences could be used to solve this problem? Diana lives in a house with one grandmother, two parents, and three sisters. How many people live in Diana's home? (A) n = 1 + 2 + 3 (B) n = 1 + 2 + 3 + 1 (C) n = 1 + 1 + 3 (D) n = 1 + 1 + 3 + 1 ____	B
RWO 0513 VR	Write a number sentences using "n" that could be used to solve the following problem. While travelling from Windsor to Montreal, Ali bought 88 L of gas in Windsor, 70 L of gas in Toronto and 50 L of gas in Kingston. How many litres of gas did he buy? _____	n = 88 + 70 + 50
RWO 0514 VM	Which one of the following number sentences could be used to solve this problem? In June, the Jones family spent $34 for electricity, $26 for telephone service, and $21 for water. What was their total bill for the month? (A) n = 34 + 26 - 21 (B) n = 34 + 21 - 26 (C) n = 34 + 26 + 21 (D) n = 26 + 21 - 34 ____	C

	Instrument	Correct Response
RWO 0515 VR	Write a number sentence using "n" that could be used to solve the following problem. A zoo plans to ship a bison, rhinoceros and elephant to another zoo. If the animals have masses of 804 kg, 2290 kg, and 4093 kg what is the total mass to be shipped? _____	n = 804 + 2290 + 4093
RWO 0516 VM	Which one of the following expressions could be used to solve this problem? During 1979 Kim grew 5 cm. In 1980 Kim grew 4 cm. In 1981 Kim grew 6 cm. In 1982 Kim grew 3 cm. How many centimetres did Kim grow during these 4 years? (A) 5 + 4 + 6 - 3 (B) 5 + 4 - 6 - 3 (C) 5 + 4 + 6 + 3 (D) 5 - 4 + 6 - 3 ____	C
RWO 0517 VR	Write a expression that could be used to solve the following problem. On a shopping trip Mario paid $25 for shoes, $30 for jeans, $20 for a shirt, and $150 for a jacket. How much did Mario spend in all? _____	25 + 30 + 20 + 150

	Instrument	Correct Response
RWO 0518 VM	Which one of the following expressions could be used to solve this problem? In one neighborhood survey there were 47 North American cars, 35 Japanese cars, 13 German cars, and 5 Swedish cars. How many cars were involved in the survey? (A) 47 - 35 + 13 + 5 (B) 47 + 35 + 13 + 5 (C) 47 + 13 + 35 - 5 (D) 47 + 35 - 13 - 5 ____	B
RWO 0519 VR	Write an expression that could be used to solve the following problem. A farmer bought three farms having areas of 400 ha, 500 ha, and 600 ha. What was the size of his farm if he started with 700 ha? _____	400 + 500 + 600 + 700
RWO 0520 VM	Which one of the following number sentences could be used to solve this problem? Bev earned $5 on Monday, $6 on Tuesday, $5 on Wednesday, and $6 on Thursday. How much did Bev earn? (A) n = 5 + 6 (B) n = 5 x 6 (C) n = 5 + 6 + 5 + 6 (D) n = 5 x 6 x 6 x 6 ____	C

	Instrument	Correct Response
RWO 0521 VR	Write a number sentence using "n" that could be used to solve the following problem. Reuben bought 20 thirty-two cent stamps, 10 fifty-cent stamps, 30 twenty-cent stamps, and 15 forty-cent stamps. How many stamps did he buy? _____	n = 20 + 10 + 30 + 15
RWO 0522 VR	Write a number sentence using "n" that could be used to solve the following problem. Jan lost 3 points for making an improper left turn, 4 points for speeding, 3 points for failing to stop at a stop sign, and 4 points for dangerous driving. How many points has she lost? _____	n = 3 + 4 + 3 + 4

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Operations	Applications

Objective — Given a word problem involving up to and including three subtractions, the student will identify a numerical expression leading to the solution of the problem.

	Instrument	Correct Response
RWO 0601 VM	Which one of the following expressions could be used to solve this problem? There are 32 children in Mr. Tapp's class. Today 8 children are absent. How many children are present? (A) 32 x 8 (B) 32 + 8 (C) 32 ÷ 8 (D) 32 - 8 ____	D
RWO 0602 VR	Write an expression that could be used to solve the following problem. Angelo's paper route has 20 customers. Angelo had delivered 5 papers. How many more papers are to be delivered? _____	20 - 5

	Instrument	Correct Response
RWO 0603 VM	Which one of the following expressions could be used to solve this problem? Ann travelled a total distance of 12 km. Of this she ran 4 km and walked the rest of the way. How far did she walk? (A) 12 + 4 (B) 12 - 4 (C) 12 ÷ 4 (D) 12 x 4 ____	B
RWO 0604 VR	Write an expression that could be used to solve the following problem. There are 30 bones in a person's leg. If there are 26 bones in the foot and ankle, how many bones are there in the rest of the leg? _____	30 - 26
RWO 0605 VM	Which one of the following number sentences could be used to solve this problem? Dave has collected 10 hockey cards. There are 50 cards in the set. How many more does Dave need to complete the set? (A) n = 50 ÷ 10 (B) n = 50 + 10 (C) n = 50 x 10 (D) n = 50 - 10 ____	D

	Instrument	Correct Response
RWO 0606 VR	Write a number sentence using "n" that could be used to solve the following problem. A car's gas tank holds 40 L. The tank contains 20 L now. How much is needed to fill it? _____	n = 40 - 20
RWO 0607 VM	Which one of the following number sentences could be used to solve this problem? A bus ticket from Peterborough to Cornwall via Ottawa costs $21. If the fare from Ottawa to Cornwall is $7, how much does it cost to go from Peterborough to Ottawa? (A) n = 21 + 7 (B) n = 21 x 7 (C) n = 21 - 7 (D) n = 21 ÷ 7 _____	C
RWO 0608 VR	Write a number sentence using "n" that can be used to solve the following problem. Geese can reach an altitude of about 7900 m. The average jet plane goes up to 10 700 m. How much higher does the plane fly than the geese? _____	n = 10 700 - 7900

	Instrument	Correct Response
RWO 0609 VM	Which one of the following expressions can be used to solve this problem. On Monday the low temperatures was 20°C. On Tuesday the temperature dropped 5°C. On Wednesday the temperature dropped 5°C more. What was Wednesday's coldest temperature? (A) 20 + 5 + 5 (B) 20 + 5 - 5 (C) 20 - 5 - 5 (D) 20 - 5 + 5 _____	C
RWO 0610 VR	Write an expression that could be used to solve the following problem. Morley travels 418 km going from Toronto to Ottawa. He remembered driving 73 km from Smith Falls to Ottawa and 94 km from Smith Falls to Kingston. How many kilometres did he drive going from Toronto to Kingston? _____	418 - 73 - 94
RWO 0611 VM	Which one of the following expressions could be used to solve this problem? Jody had 67 d of summer holidays. She spent 10 d with her uncle and 15 d at a friend's cottage and the rest of the time at home. How may days was she at home? (A) 67 + 10 + 15 (B) 67 - 10 + 15 (C) 67 + 10 - 15 (D) 67 - 10 - 15 _____	D

	Instrument	Correct Response
RWO 0612 VM	Which one of the following number sentences could be used to solve this problem? Nicole sees a T.V. with a list price of $500. A store has a sale and offers Nicole $150 off the list price. The manufacturer is giving a rebate of $100 on that set. How much will Nicole have to pay? (A) n = 150 - 100 (B) n = 500 - 100 + 150 (C) n = 500 - 150 (D) n = 500 - 150 - 100 _____	D
RWO 0613 VR	Write a number sentence using "n" that could be used to solve the following problem. The school band has 40 members. Ten members are absent. Six other members are writing exams. How many members are left to practise? _____	n = 40 - 10 - 6
RWO 0614 VM	Which one of the following number sentences could be used to solve this problem? On Monday a stock was valued at $50 a share. On Tuesday the stock lost $15 a share. On Wednesday the stock lost $10 a share. What was the value on Wednesday night? (A) n = 50 + 15 + 10 (B) n + 50 + 15 - 10 (C) n = 50 - 15 + 10 (D) n = 50 - 15 - 10 _____	D

	Instrument	Correct Response
RWO 0615 VM	Which one of the following expressions could be used to solve this problem? Tim's mass was 90 kg at the beginning of the month. After 1 week Tim lost 2 kg. The next week Tim lost 1 kg. Last week Tim lost 1 kg. What was Tim's mass at the end of the third week? (A) 90 + 2 + 1 (B) 90 - 2 - 1 (C) 90 + 2 + 1 + 1 (D) 90 - 2 - 1 - 1 ____	D
RWO 0616 VR	Write an expression that could be used to solve the following problem. Tim wants to save $500 in 4 months. In the first month he saves $100, in the second month he saves $150, in the third month he saves $50. How much must he save in the fourth month? _____	500 - 100 - 150 - 50
RWO 0617 VM	Which one of the following expressions could be used to solve this problem? A board is 72 cm long. Chris sawed off two pieces each 18 cm long and one piece 12 cm long. How long a piece of board is left? (A) 72 + 18 + 12 (B) 72 - 18 - 12 (C) 72 + 18 + 18 + 12 (D) 72 - 18 - 18 - 12 ____	D

	Instrument	Correct Response
RWO 0618 VM	Which one of the following number sentences could be used to solve this problem? A restaurant bill totaled $60. The main courses cost $35. The beverages cost $8. The desserts cost $11. How much was the sales tax? (A) n = 60 + 35 + 8 + 11 (B) n = 60 + 35 - 8 - 11 (C) n = 60 - 35 - 8 + 11 (D) n = 60 - 35 - 8 - 11 ____	D
RWO 0619 VR	Write a number sentence using "n" that could be used to solve the following problem. Peggy had 20 bills in her purse. She had five $20 bills. She had ten $10 bills and three $5 bills. If the rest were $2 bills, how many $2 bills did she have? _____	n = 20 - 5 - 10 - 3
RWO 0620 VM	Which one of the following number sentences could be used to solve this problem? The MacLean's 2500-L oil tank was filled in August. In September they used 200 L. In October they used 500 L. In November they used 800 L. How much oil was left in the tank? (A) n = 2500 + 200 + 500 + 800 (B) n = 2500 - 200 - 500 + 800 (C) n = 2500 - 200 + 500 - 800 (D) n = 2500 - 200 - 500 - 800 ____	D

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Operations	Applications

Objective — Given a word problem involving up to and including three multiplications, the student will identify a numerical expression leading to the solution of the problem.

	Instrument	Correct Response
RWO 0701 VM	Which one of the following expressions could be used to solve this problem? Walter packed 72 boxes of cookies. He put 8 cookies in each box. How many cookies did he pack? (A) 72 + 8 (B) 72 - 8 (C) 72 x 8 (D) 72 ÷ 8 ____	C
RWO 0702 VR	Write an expression that could be used to solve the following problem. Ann bought 3 stamps. Each stamp cost 32¢. How much money did she spend? _____	32 x 3

	Instrument	Correct Response
RWO 0703 VM	Which one of the following expressions can be used to solve this problem? If there are 24 h in a day, how many hours are there in 6 d? (A) 24 - 6 (B) 24 + 6 (C) 24 ÷ 6 (D) 24 x 6 ____	D
RWO 0704 VR	Write an expression that could be used to solve the following problem. If the length of a rectangular room is 8 m and the width is 4 m, what is the area of the room? _____	8 x 4
RWO 0705 VM	Which one of the following number sentences could be used to solve this problem? Dorothy's classroom has 6 rows of seats. Each row has 5 seats. How many seats are there altogether? (A) n = 6 ÷ 5 (B) n = 6 x 5 (C) n = 6 + 5 (D) n = 6 - 5 ____	B

	Instrument	Correct Response
RWO 0706 VR	Write a number sentence using "n" that could be used to solve the following problem. The length of a rectangle is 25 cm. The width of the rectangle is 5 cm. What is the area of the rectangle? _____	n = 25 x 5
RWO 0707 VM	Which one of the following number sentences could be used to solve the problem? If Shawna rides her bike at a steady 15 km/h, how far can she go in 3 h? (A) n = 15 x 3 (B) n = 15 - 3 (C) n = 15 + 3 (D) n = 15 ÷ 3 _____	A
RWO 0708 VR	Write a number sentence using "n" that could be used to solve the following problem. If Bill has 4 different shirts and two different pairs of jeans, how many different outfits can he make? _____	n = 4 x 2

	Instrument	Correct Response
RWO 0709 VM	Which one of the following expressions could be used to solve this problem? Julio is using 2 boxes the same size to pack canned fruit. If he puts 4 layers of 6 cans each into each box, how many cans does he pack? (A) 4 x 2 + 6 (B) 4 x 6 + 2 (C) 4 x 6 x 2 (D) 4 + 6 + 2 _____	C
RWO 0710 VR	Write an expression that could be used to solve the following problem. The length of a rectangular room is 6 m. The width of the room is 4 m. The height of the room is 2 m. What is the volume? _____	6 x 4 x 2
RWO 0711 VM	Which one of the following expressions can be used to solve this problem? If there are 60 s in 1 min, and 60 min in 1 h, and 24 h in a day, how many seconds are there in 1 d? (A) 60 + 60 + 24 (B) 60 + 60 x 24 (C) 60 x 60 + 24 (D) 60 x 60 x 24 _____	D

	Instrument	Correct Response
RWO 0712 VR	Write an expression that could be used to solve the following problem. Monica sold chocolate bars for the school band for $2 each. How much money did she turn in if she sold three boxes of 12 bars each? _____	2 x 3 x 12
RWO 0713 VM	Which one of the following number sentences could be used to solve this problem? A carton contains 12 boxes of crayons. Each box contains 24 crayons. How many crayons are there in 3 cartons? (A) n = 3 x 12 + 24 (B) n = 3 + 12 x 24 (C) n = 3 x 12 x 24 (D) n = 3 + 12 + 24 ____	C
RWO 0714 VR	Write a number sentence using "n" that could be used to solve the following problem. There are 10 mm in 1 cm. There are 100 cm in 1 m. How many millimetres are in 10 m? _____	n = 10 x 10 x 100

	Instrument	Correct Response
RWO 0715 VM	Which one of the following number sentences could be used to solve the problem? If a car comes in 3 different body styles, 6 different colours, and 4 different interiors, how many different cars are possible? (A) n = 6 + 3 + 4 (B) n = 6 x 3 + 4 (C) n = 6 + 3 x 4 (D) n = 6 x 3 x 4 ____	D
RWO 0716 VR	Write a number sentence using "n" that could be used to solve the following problem. Ms. McIntyre has to drive for 2 h at 100 km/h to get to work. How many kilometres does she travel going to work and back? _____	n = 2 x 100 x 2
RWO 0717 VM	Which one of the following expressions could be used to solve this problem? A store owner bought 5 cartons of chewing gum. If 1 carton contains 24 boxes, each box contains 10 packages and 1 package contains 10 sticks, how many sticks of chewing gum did she buy altogether? (A) 5 + 24 + 10 + 10 (B) 5 x 24 + 10 x 10 (C) 5 + 24 x 10 + 10 (D) 5 x 24 x 10 x 10 ____	D

	Instrument	Correct Response
RWO 0718 VR	Write an expression that could be used to solve the following problem. Mrs. Osaka makes 20 trips of 200 km every month. What is her car allowance for a year if she gets paid 25¢/km? _____	20 x 200 x 12 x 25
RWO 0719 VM	Which one of the following number sentences could be used to solve this problem? A city has to dig a trench for a sewer. The length is to be 10 m, the width 2 m, and the depth is 2 m. How much does it cost the city to have the trench dug at $\$10/m^3$? (A) n = 10 + 2 + 2 x 10 (B) n = 10 x 2 x 2 + 10 (C) n = 10 + 2 + 2 + 10 (D) n = 10 x 2 x 2 x 10 _____	D
RWO 0720 VR	Write a number sentence using "n" that could be used to solve the following problem. There are 60 s in 1 min. There 60 min in 1 h. There are 24 h in 1 d. There are 7 d in 1 week. How many seconds in 1 week? _____	n = 60 x 60 x 24 x 7

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Operations	Applications

Objective — Given a word problem involving up to and including three divisions, the student will identify a numerical expression leading to the solution of the problem.

	Instrument	Correct Response
RWO 0801 VM	Which one of the following expressions could be used to solve this problem? A school has 72 students playing hockey. There are 8 hockey teams. How many players are on each team? (A) 72 x 8 (B) 72 + 8 (C) 72 ÷ 8 (D) 72 - 8 ____	C
RWO 0802 VR	Write an expression that could be used to solve the following problem. Laura bought 12 candies. The total cost was 60¢. How much did each one cost? _____	60 ÷ 12

	Instrument	Correct Response
RWO 0803 VM	Which one of the following expressions could be used to solve this problem? Vivian has 500 stamps in her collection. If she puts 50 stamps on each page, how many pages does the album have? (A) 500 - 50 (B) 500 + 50 (C) 500 x 50 (D) 500 ÷ 50 _____	D
RWO 0804 VR	Write an expression that could be used to solve the following problem. A grocer packs 504 oranges in plastic bags. If he puts 24 oranges in a bag, how many bags will he need? _____	504 ÷ 24
RWO 0805 VM	Which one of the following number sentences could be used to solve the problem? There are 72 cookies. 8 cookies are packed in each box. How many boxes are needed? (A) n = 72 x 8 (B) n = 72 ÷ 8 (C) n = 72 - 8 (D) n = 72 + 8 _____	B
RWO 0806 VR	Write a number sentence using "n" that could be used to solve the following problem. The area of a rectangular garden is 100 m^2. The length of the garden is 20 m. What is the width of the garden? _____	n = 100 ÷ 20

	Instrument	Correct Response
RWO 0807 VM	Which one of the following number sentences could be used to solve this problem? If Jim rides his bike at a steady speed, he covers 48 km in 3 h. How fast is he travelling? (A) n = 48 - 3 (B) n = 48 + 3 (C) n = 48 ÷ 3 (D) n = 48 x 3 _____	C
RWO 0808 VR	Write a number sentence using "n" that could be used to solve the following problem. How many different pairs of jeans must Marta have if she can make 15 different "jean-shirts" combinations by using 5 different shirts? _____	n = 15 ÷ 5
RWO 0809 VR	Write an expression that could be used to solve the following problem. Hans earns $480 for working 10 d. He works 8 h/d. What is his hourly wage? _____	480 ÷ 10 ÷ 8

	Instrument	Correct Response
RWO 0810 VR	Write an expression that could be used to solve the following problem. Each layer in a case of dog food contains 4 rows of 6 tins. How many layers are there in a case that contains 72 tins? _____	72 ÷ 6 ÷ 4
RWO 0811 VM	Which one of the following number sentences can be used to solve this problem? There are 1000 g in 1 kg. There are 1000 kg in 1 T. How many tonnes are in 1 000 000 g.? (A) n = 1 000 000 ÷ 1000 - 1000 (B) n = 1 000 000 - 1000 ÷ 1000 (C) n = 1 000 000 ÷ 1000 x 1000 (D) n = 1 000 000 ÷ 1000 ÷ 1000 _____	D
RWO 0812 VR	Write a number sentence using "n" that could be used to solve the following problem. The volume of a rectangular box is 144 cm^3 If its length is 8 cm, and its depth is 3 cm, what is its width? _____	n = 144 ÷ 8 ÷ 3

	Instrument	Correct Response
RWO 0813 VR	Write an expression that could be used to solve the following problem. The cost of the concrete pad was $3 000. If the pad was 5 m long, 4 m wide, and 3 m deep, how much does 1 m^3 of concrete cost? _____	3 000 ÷ 5 ÷ 4 ÷ 3
RWO 0814 VM	Which one of the following expressions could be used to solve this problem? Carla works 7 h a day, 5 d a week for 50 weeks in a year. If her annual salary is $7000, what is her hourly wage? (A) 7000 ÷ 50 ÷ 5 ÷ 7 (B) 7000 ÷ 50 ÷ 5 x 7 (C) 7000 ÷ 50 x 5 x 7 (D) 7000 x 50 x 5 x 7 _____	A
RWO 0815 VR	Write an expression that could be used to solve the following problem. A supermarket received an order of 4800 tins of catfood. If each case contained 4 layers of 4 rows of 3 tins, how many cases had to be unloaded? _____	4800 ÷ 4 ÷ 4 ÷ 3

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Operations	Applications

Objective — Given a word problem involving two or three different operations, the student will identify a numerical expression leading to the solution of the problem.

	Instrument	Correct Response
RWO 0901 VM	Which one of the following expressions could be used to solve this problem? John bought a radio for $69. John used a $12 gift certificate. John paid with a $100 bill. How much change did he receive? (A) 100 + 12 + 69 (B) 100 - 12 + 69 (C) 100 + 12 - 69 (D) 100 - 12 - 69 _____	C
RWO 0902 VR	Write a number sentence using "n" that could be used to solve the following problem. Bev was 40 kg when she started her diet. She lost 2 kg the first week. She gained 1 kg the next week. How heavy was she at the end of the second week? _____	n = 40 - 2 + 1

	Instrument	Correct Response
RWO 0903 VM	Which one of the following number sentences could be used to solve this problem? Mark had 118 marbles. He found 15 more marbles and then gave 27 to his friend Peter. How many marbles does Mark have now? (A) n = 118 + 15 + 27 (B) n = 118 - 15 + 27 (C) n = 118 + 15 - 27 (D) n = 118 - 15 - 27 ____	C
RWO 0904 VR	Write an expression that could be used to solve the following problem. On Thursday night the temperature rose 12°C from the previous low of 10°C. If the temperature dropped 9°C on Friday, how cold was it then? _____	10 + 12 - 9
RWO 0905 VR	Write a number sentence using "n" that could be used to solve the following problem. A farmer has 10 boxes of potatoes. There are 20 kg of potatoes in a box. How many 5-kg bags can she pack? _____	n = 10 x 20 ÷ 5

	Instrument	Correct Response
RWO 0906 VM	Which one of the following number sentences could be used to solve this problem? Kathy works 5 d to earn $105. If she works 7 h each day, what is her hourly wage? (A) n = 105 ÷ 5 ÷ 7 (B) n = 105 ÷ 5 x 7 (C) n = 105 x 5 ÷ 7 (D) n = 105 x 5 x 7 _____	A
RWO 0907 VM	Which one of the following expressions could be used to solve this problem? Robert had 80¢. He lost 10¢. He used all of his money to buy gum at 5¢ a stick. How many sticks could he buy? (A) (80 + 10) ÷ 5 (B) (80 + 10) x 5 (C) (80 - 10) ÷ 5 (D) (80 - 10) x 5 _____	C
RWO 0908 VR	Write a number sentence using "n" that could be used to solve the following problem. Dinner for four, including tax, costs $120. Each person leaves a tip of $4. How much does each of the four people pay? _____	n = 120 ÷ 4 + 4

	Instrument	Correct Response
RWO 0909 VM	Which one of the following expressions could be used to solve this problem? Sylvia bought 2 pictures for $55 each, including sales tax. She used 2 discount coupons worth $5 each. How much did the two pictures cost? (A) (55 + 5) x 2 (B) (55 + 5) ÷ 2 (C) (55 - 5) x 2 (D) (55 - 5) ÷ 2 ____	C
RWO 0910 VR	Write a number sentence using "n" that could be used to solve the following problem. A T.V. service call costs $25. It cost $15 to replace 1 transistor. If the repairman replaces 3 transistors, what is the total cost? _____	n = 25 + 15 x 3
RWO 0911 VM	Which one of the following expressions could be used to solve this problem? Bill spent 12 h at work on Saturday. Bill spent 10 h at work on Sunday. His lunch time was 3 h for both days. His breaks were 2 h for both days. How much time did Bill actually work? (A) 12 + 10 + 3 + 2 (B) 12 + 10 + 3 - 2 (C) 12 + 10 - 3 - 2 (D) 12 - 10 - 3 - 2 ____	C

	Instrument	Correct Response
RWO 0912 VR	Write a number sentence using "n" that could be used to solve the following problem. 27 students were present at roll call. 4 students were sick. 3 students came in late. 2 students were on field trips. How many were registered? _____	n = 27 + 4 + 3 + 2
RWO 0913 VM	Which one of the following number sentences could be used to solve this problem? Jim had saved $112 for Christmas. He spent $62 on presents. Luckily he received $15 for a present too! If he earned $12 delivering papers how much would his savings total then? (A) n = 112 + 62 + 15 + 12 (B) n = 112 - 62 - 15 - 12 (C) n = 112 + 62 - 15 - 12 (D) n = 112 - 62 + 15 + 12 ____	D
RWO 0914 VR	Write an expression that could be used to solve the following problem. On Tuesday shares of Great Gold Mines were selling at $75. The shares gained $10 on Wednesday but dropped $6 on Thursday, and $5 on Friday. How much were the shares selling at when the stock market closed on Friday afternoon? _____	75 + 10 - 6 - 5

	Instrument	Correct Response
RWO 0915 VM	Which one of the following expressions could be used to solve this problem? Sheila worked 8 hours at $4/h. Sheila also made $15 in tips. Sheila got a bonus of $10 that day. How much did she make in all? (A) 8 x 4 + 15 + 10 (B) 8 x 4 + 15 - 10 (C) 8 - 4 + 15 + 10 (D) 8 - 4 + 15 - 10 _____	A
RWO 0916 VR	Write a number sentence using "n" that could be used to solve the following problem. Nick bought five 5-kg bags of cat chow, four 5-kg bags of cat litter, and three 5-kg bags of dog chow. What was the total mass of his purchases? _____	n = 5 x (5 + 4 + 3) or n = 5 x 5 + 4 x 5 + 3 x 5
RWO 0917 VR	Write an expression that could be used to solve the following problem. Oleg had 10 weeks and 2 d of summer holidays and was to go to his uncle's farm for that time. Unfortunately, he was sick for 6 d and could not leave when he planned. How many days was he at the farm? _____	10 x 7 + 2 - 6

	Instrument	Correct Response
RWO 0918 VM	Which one of the following expressions could be used to solve this problem? George worked 10 h at $4/h. Bill worked 5 h at $6/h. How much money did they earn altogether? (A) 10 + 4 x 6 + 5 (B) 10 + 6 x 5 + 4 (C) 10 x 4 + 5 x 6 (D) 10 x 6 + 5 x 4 ____	C
RWO 0919 VR	Write a number sentence using "n" that could be used to solve the following problem. Jean has 4 bags of 20 buttons each. Paul has 60 buttons. How many buttons will each person have if they share them equally? _____	n = (4 x 20 + 60) ÷ 2
RWO 0920 VM	Which one of the following number sentences could be used to solve this problem? Teresa bought 4 pairs of jeans at $20 each and her brother Sandy bought 5 shirts at $15 each. How much more money did Teresa spend? (A) n = 4 x 20 + 5 x 15 (B) n = 5 x 20 + 4 x 15 (C) n = 4 x 20 - 5 x 15 (D) n = 5 x 20 - 4 x 15 ____	C

	Instrument	Correct Response
RWO 0921 VM	Which one of the following expressions could be used to solve this problem? A truck box is full of sand. It is 4 m long, 2 m high, and 3 m wide. The sand is to be shared by two families. How many m^3 of sand will each family get? (A) 4 x 2 x 3 x 2 (B) 4 x 2 x 3 ÷ 2 (C) 4 x 2 ÷ 3 ÷ 2 (D) 4 ÷ 2 ÷ 3 ÷ 2 _____	B
RWO 0922 VR	Write a number sentence using "n" that could be used to solve the following problem. Bert and Walter buy 3 cases of cola for their families. There are 24 cans in each case. If there are 4 in Bert's family and 5 in Walter's, how many cans will each person get? _____	n = 3 x 24 ÷ (4 + 5)

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Operations	Applications

Objective Given a word problem involving up to and including three additions, the student will solve the problem.

	Instrument	Correct Response
RWO 1001 VM	Mrs. Winter's class has 18 children with brown eyes and 9 children with blue eyes. How many children are in her class? (A) 2 (B) 9 (C) 27 (D) 162 _____	C
RWO 1002 VR	Gerry's mass was 56 kg last month. He gained 3 kg this month. What is Gerry's mass now? _____	59 kg
RWO 1003 VM	Joe rode his bicycle for 24 km and then he pushed it for 6 km. How far did he travel altogether? (A) 144 km (B) 30 km (C) 18 km (D) 4 km _____	B

	Instrument	Correct Response
RWO 1004 VR	If Wendy won $10 000 in a lottery and her sister Wanda won $5000, how much did they win together? _____	$15 000
RWO 1005 VM	Colette is making book shelves. One shelf is to be 2 m long. Another shelf is to be 4 m long. The last shelf is to be 6 m long. What length of shelving is needed? (A) 28 m (B) 36 m (C) 20 m (D) 12 m _____	D
RWO 1006 VR	On Monday the temperature was 25°C. On Tuesday the temperature rose 7°C. On Wednesday the temperature rose 3°C. What was Wednesday's highest temperature? _____	35°C
RWO 1007 VM	Marie went shopping for her father. She spent 70 min at the grocery store and 25 min at the butcher shop. She spent 25 min travelling. How long was she away altogether? (A) 75 min (B) 110 min (C) 120 min (D) 130 min _____	C

	Instrument	Correct Response
RWO 1008 VR	The attendance figures for the first three hockey games in the season were 5 000, 15 000 and 10 000. What was the total attendance? _____	30 000
RWO 1009 VM	During her holidays Jill bought 50 L of gas on Monday. She bought 60 L of gas on Tuesday, 40 L of gas on Wednesday, and 60 L of gas on Thursday. How much gas did she buy altogether? (A) 150 L (B) 160 L (C) 210 L (D) 220 L ____	C
RWO 1010 VR	Travelling on Highway 401, it is 190 km from Windsor to London. It is 183 km from London to Toronto. It is 257 km from Toronto to Kingston. It is 177 km from Kingston to Cornwall. How far will you travel on the 401 going from Windsor to Cornwall? _____	807 km
RWO 1011 VM	Greta's family is going camping. They bought a tent for $98, a sleeping bag for $51, dishes for $16, and a camp stove for $22. How much did they spend? (A) $176 (B) $177 (C) $186 (D) $187 ____	D

	Instrument	Correct Response
RWO 1012 VR	Robert has 42 marbles and Mark has 56. They each put their marbles into a bag containing 14 marbles. How many marbles are in the bag now? _____	112

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Operations	Applications

Objective — Given a word problem involving up to and including three subtractions, the student will solve the problem.

	Instrument	Correct Response
RWO 1101 VM	There are 24 children in Mrs. Winter's class. If 8 of them are boys, how many are girls? (A) 3 (B) 16 (C) 32 (D) 192 ____	B
RWO 1102 VR	My father's car has 20 L of gas in the tank. If the tank holds 80 L, how many litres are needed to fill the tank? _____	60 L
RWO 1103 VM	A jet plane flies at an altitude of 12 000 m. A regular plane flies at 6 000 m. How much higher does the jet fly? (A) 2 000 m (B) 6 000 m (C) 18 000 m (D) 72 000 m ____	B

	Instrument	Correct Response
RWO 1104 VR	The population of the city of Ottawa is about 301 000, while that of Thunder Bay is about 112 000. What is the difference in population of these two cities? _____	189 000
RWO 1105 VM	80 people work at a factory. 10 people are absent and 20 other people are on vacation. How many are at work? (A) 40 (B) 50 (C) 60 (D) 70 _____	B
RWO 1106 VR	Ron has 120 m of rope. He used 30 m to tie up his boat and 20 m to make a swing. How much rope is left? _____	70 m
RWO 1107 VM	Mr. Dempsey earns $900 every two weeks. If his only deductions are $225 for income tax and $75 for a pension plan, what is his take home pay? (A) $400 (B) $500 (C) $600 (D) $700 _____	C

	Instrument	Correct Response
RWO 1108 VR	On Wednesday the high temperature was 30°C. It fell by 5°C the next day, and by another 10°C the following day. What was the Friday high temperature? _____	15°C
RWO 1109 VM	John plans to make a trip 1600 km long. He travels 200 km on the first day and 300 km on the second day and 400 km on the third day. How many kilometres has he yet to go? (A) 500 (B) 600 (C) 700 (D) 800 _____	C
RWO 1110 VR	Leo saved $5000 for his daughter's wedding. He paid $650 for hall rental, $3150 for the reception and $1050 for the band. How much was left from his savings? _____	$150

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Operations	Applications

Objective — Given a word problem involving up to and including three multiplications, the student will solve the problem.

	Instrument	Correct Response
RWO 1201 VM	John bought 10 sticks of gum for 5¢ each. How much did he spend altogether? (A) 5¢ (B) 15¢ (C) 50¢ (D) 90¢ _____	C
RWO 1202 VR	There are 1000 mL in 1 L. How many millilitres are there in 100 L? _____	100 000 mL
RWO 1203 VM	Paula bought 8 boxes of crayons with 24 crayons in each box. How many crayons did she buy in all? (A) 16 (B) 32 (C) 162 (D) 192 _____	D

	Instrument	Correct Response
RWO 1204 VR	The speed of sound is 1224 km/s. This speed is called Mach 1. Mach 2 is twice as fast, Mach 3 is three times as fast as Mach 1. The X-15 Rocket can fly at a speed of Mach 5. How fast is this in kilometres per second? _____	6120
RWO 1205 VR	A grocery store had 5 cases of tuna. There are 3 layers of cans in each case with 12 cans in each layer. How many cans does the store have? _____	180
RWO 1206 VM	If installed carpet costs \$15/m^2, what is the cost of carpeting a room that is 4 m by 5 m? (A) \$24 (B) \$80 (C) \$95 (D) \$300 ____	D
RWO 1207 VR	Mary is paid \$5/h. She works 6 h a day, 5 d a week, 4 weeks in a month. How much does she earn each month? _____	\$600

	Instrument	Correct Response
RWO 1208 VM	Topsoil costs \$10/m^3. What will it cost to buy a full load of soil from a truck having a box that is 2 m by 2 m by 3 m? (A) \$34 (B) \$52 (C) \$72 (D) \$120 _____	D
RWO 1209 VR	A subway system has 10 trains each having 10 cars. Each car is capable of carrying 50 passengers. If each train makes 20 trips per day. what is the maximum number of passengers that can be carried? _____	100 000

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Operations	Applications

Objective — Given a word problem involving up to and including three divisions, the student will solve the problem.

	Instrument	Correct Response
RWO 1301 VM	Brad baked 72 cookies. He packed 12 cookies in a box. How many boxes will he need? (A) 84 (B) 60 (C) 6 (D) 4 ____	C
RWO 1302 VR	Susan's class collected $100 selling tickets. Each ticket sold for $4. How many tickets did they sell? _____	25
RWO 1303 VM	Andrea travels 270 km in 3 h. What is her average speed? (A) 810 km/h (B) 270 km/h (C) 90 km/h (D) 30 km/h ____	C

	Instrument	Correct Response
RWO 1304 VM	A $240 necklace costs 4 times as much as a ring. The ring costs twice as much as a pin. How much does the pin cost? (A) $120 (B) $60 (C) $40 (D) $30 _____	D
RWO 1305 VR	A grocery has 576 tins of soup in the storeroom. If there are 4 layers of tins in each case, 4 rows of tins in each layer, and 3 tins in each row, how many cases of soup are there? _____	12

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Operations	Applications

Objective — Given a word problem involving two or three different operations, the student will solve the problem.

	Instrument	Correct Response
RWO 1401 VM	On Sunday the temperature was 32°C. On Monday the temperature fell 8°C. On Tuesday the temperature rose 3°C. What was Tuesday's temperature? (A) 21°C (B) 27°C (C) 37°C (D) 43°C ____	B
RWO 1402 VR	Pam bought a record marked at $9. She got a discount of $1. If Pam paid with a $20 bill, how much change would she get? _____	$12
RWO 1403 VR	Jack lost 19 marks out of 80 when he wrote a history test but picked up 6 marks for a bonus question. What was his final mark? _____	67

	Instrument	Correct Response
RWO 1404 VM	Paul's fruit market bought 6 boxes of apples. If there are 30 apples in a box, how many dozen apples were there? (A) 3 (B) 12 (C) 15 (D) 24 _____	C
RWO 1405 VM	If Chris earns $300 every two weeks, how much does she earn in five weeks? (A) $500 (B) $750 (C) $1500 (D) $2100 _____	B
RWO 1406 VM	Wendy has 40¢. Sheila has 30¢. They bought candies for 5¢ each. How many candies could they buy? (A) 12 (B) 14 (C) 70 (D) 75 _____	B
RWO 1407 VR	Three sisters buy a T.V. for $300. They each have a $10 gift certificate. How much does each one pay before tax? _____	$90

	Instrument	Correct Response
RWO 1408 VM	Bill has 3 weeks and 5 d of vacation. If he divided the time equally between camping and travelling, how many days did he spend camping? (A) 4 (B) 8 (C) 13 (D) 16 _____	C
RWO 1409 VR	If a bus carries 40 students how many trips have to be made to transport 110 boys and 90 girls? _____	5
RWO 1410 VM	Blouses are on sale for $25 each. The sales tax is $1.75. How much would you pay for 4 blouses? (A) $93 (B) $100 (C) $107 (D) $117 _____	C
RWO 1411 VR	There are 7 d in a week. How many days are there in 5 weeks and 2 d? _____	37
RWO 1412 VM	To print a booklet there is a setup fee of $48 and then a charge of $2 per copy. How much does it cost to print 10 copies? (A) $500 (B) $106 (C) $68 (D) $60 _____	C

	Instrument	Correct Response
RWO 1413 VR	An assembly line makes 120 electric clocks per day. If 2 clocks are discarded from each day's production, how many working clocks are produced in 6 d? _____	708
RWO 1414 VM	Rob has a $50 bill for his birthday. He buys a record for $9 and a book for $19. If he receives a $2 discount for cash, how much change does he get? (A) $12 (B) $20 (C) $24 (D) $36 _____	C
RWO 1415 VR	Joe is driving at 80 km/h. If he slows down by 26 km/h and then speeds up by 17 km/h and later speeds up by 30 km/h, how fast is he going now? _____	101 km/h
RWO 1416 VM	There are 37 people on a bus just before the Elm Street stop. If 6 men and 7 women leave and 4 children get on at the stop, how many people are in the bus now? (A) 54 (B) 46 (C) 28 (D) 20 _____	C

	Instrument	Correct Response
RWO 1417 VM	Terry worked 8 h/d for 4 d at the beginning of the week. He worked 10 h on Friday and 9 h on Saturday. How many hours did he work during the week? (A) 31 (B) 51 (C) 54 (D) 57 ____	B
RWO 1418 VR	Mr. Fox makes 4 service calls in the morning, 5 service calls in the afternoon, and 3 service calls in the evening. How much does he earn at $20 per call? _____	$240
RWO 1419 VM	There were 23 min of commercials in a 2 h and 15 min television movie. How long did did the movie run? (A) 247 min (B) 183 min (C) 158 min (D) 112 min ____	D
RWO 1420 VR	Mr. Carbone went to the nursery and bought four 40-kg bags of fertilizer, two 10-kg bags of grass seed, and one 40-kg of peat moss. How heavy a load did he have to take home? _____	220 kg

	Instrument	Correct Response
RWO 1421 VM	Bill has 2 ten-stick packages and 4 single sticks of gum. He divides them equally among himself and two friends. How many sticks of gum does each one get? (A) 2 (B) 4 (C) 6 (D) 8 _____	D
RWO 1422 VR	Dorothy buys seven records at $4 each and six records at $8 each. How much does she spend altogether? _____	$76
RWO 1423 VM	Rosh had $40 in $2 bills and $50 in $5 bills. How many more $2 bills did he have? (A) 10 (B) 13 (C) 17 (D) 20 _____	A
RWO 1424 VR	If a job taking 2 h and 30 min is shared by five people, how long does each one have to work? _____	30 minutes
RWO 1425 VM	Two classes of 30 students each went on a bus trip. It cost $180 for the buses. How much did each pupil have to pay? (A) $1 (B) $3 (C) $4 (D) $6 _____	B

	Instrument	Correct Response
RWO 1426 VR	The coach bought eight 6-packs of juice. He divided them equally among 4 teams of 4 players each. How many bottles did each player get? _____	3
RWO 1427 VR	A bird flying at 9 km/h flies 8 times slower than a duck. If a plane travels at 864 km/h, how many times faster does it fly than the duck? _____	12
RWO 1428 VM	How many minutes does a clock lose in 5 weeks if it loses 2 s/h? (A) 20 (B) 28 (C) 40 (D) 56 _____	B
RWO 1429 VR	How many hours will it take a conveyor belt that can move 100 kg/min to unload a barge loaded with 72 t of wheat? _____	12

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Operations	Applications

Objective — Given an expression involving up to and including three additions, the student will identify or create a word problem that can be solved using the expression.

	Instrument	Correct Response
RWO 1501 VM	Which one of the following word problems can be solved by using the expression 12 + 3? (A) There are 12 children. They have 3 candies each. How many candies do they have in all? (B) Mary has 12 candies. Jane has 3 candies. How many candies do they have in all? (C) There are 12 candies. There are 3 children. How many candies for each one? (D) Mary has 12 candies. Jane has 3 candies. How many more candies does Mary have? _____	B
RWO 1502 VR	Make up a story problem that can solved by using the expression 15 + 12. _____ _____ _____ _____ _____	Various solutions

	Instrument	Correct Response
RWO 1503 VM	Which one of the following word problems can be solved by using the number sentence n = 12 + 36? (A) What is the cost of buying twelve $36 shirts? (B) What is the difference in price between a $12 shirt and a $36 shirt? (C) How many $12 shirts can be bought for $36? (D) What is the cost of buying a $12 shirt and a $36 shirt? ____	D
RWO 1504 VR	Make up a story problem that can be solved by using the number sentence n = 6 + 8. _____ _____ _____ _____ _____	Various solutions
RWO 1505 VM	Which one of the following word problems can be solved by using the expression 20 + 5 + 2? (A) The food costs $5. The drinks cost $2. The cashier is given $20. How much change? (B) The cookies cost $20. There are 5 boxes. There are 2 packages in each box. How much does each package cost? (C) The food costs $20. The desserts cost $5. The drinks cost $2. How much does everything cost? ____	C

	Instrument	Correct Response
RWO 1506 VR	Make up a story problem that can be solved by using the expression 8 + 4 + 2. _____ _____ _____ _____ _____	Various solutions
RWO 1507 VR	Make up a story problem that can be solved by using the number sentence n = 50 + 10 + 5. _____ _____ _____ _____ _____	Various solutions
RWO 1508 VM	Which one of the following word problems can be solved by using the expression 6 + 2 + 8 + 4? (A) Six players score 2 points each. Eight players score 4 points each. How many points altogether? (B) Six points are scored by 2 players. Eight points are scored by 4 players. How many points altogether? (C) Six points are scored by one player, two points are scored by the next, eight by the next, and 4 by the last. How many points altogether? ____	C

	Instrument	Correct Response
RWO 1509 VR	Make up a story problem that can be solved by using the expression 5 + 2 + 6 + 4. _____ _____ _____ _____ _____	Various solutions
RWO 1510 VM	Which one of the following word problems can be solved by using the number sentence n = 2 + 5 + 2 + 7. (A) How many seconds are there in 2 d, 5 h, 2 min, and 7 s? (B) How many millimetres are there in 2 km, 5 m, 2 cm, and 7 m? (C) How many dollars are there in $2, $5, $2, and $7? (D) How many milligrams are there in 2 t, 5 kg, 2 g, and 7 mg? ____	C
RWO 1511 VR	Make up a story problem that can be solved by using the number sentence n = 1 + 2 + 3 + 4. _____ _____ _____ _____ _____	Various solutions

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Operations	Applications

Objective — Given an expression involving up to and including three subtractions, the student will identify or create a word problem that can be solved using the expression.

	Instrument	Correct Response
RWO 1601 VM	Which one of the following word problems can be solved by using the expression 24 - 8? (A) There are 8 blue pencils. There are 24 red pencils. How many pencils in all? (B) There are 8 blue pencils. There are 24 red pencils. How many more red pencils are there? (C) There are 8 boxes of pencils. There are 24 pencils in a box. How many pencils in all? ____	B
RWO 1602 VR	Make a story problem that can be solved by using the expression 30 - 22. _____ _____ _____ _____ _____	Various solutions

	Instrument	Correct Response
RWO 1603 VM	Which one of the following word problems can be solved by using the number sentence n = 6 - 3? (A) What is the area of a rectangular room that is 6 m by 3 m? (B) What is the perimeter of a rectangular room that is 6 m by 3 m? (C) What is the difference between the length and width of a rectangular room that is 6 m by 3 m? _____	C
RWO 1604 VR	Make up a story problem that can be solved by using the number sentence n = 40 - 6. _____ _____ _____ _____ _____	Various solutions
RWO 1605 VM	Which one of the following word problems can be solved by using the expression 16 - 4 - 2? (A) There are 16 students on a team. There are 4 new members. There are 2 drop-outs. How many are on the team now? (B) There are 16 students on a team. There are 4 students in a squad. There are 2 squads in a group. How many groups are there? (C) There are 16 students on a team. There are 4 injured students. There are 2 dropouts. How many are on the team now? _____	C

	Instrument	Correct Response
RWO 1606 VR	Make a story problem that can be solved by using the expression 20 - 10 - 5. _____ _____ _____ _____ _____	Various solutions
RWO 1607 VM	Which one of the following word problems can be solved by using the number sentence n = 36 - 4 - 3? (A) How much does it cost to buy a car part that lists at $36 not including an exchange credit of $4, nor a tax of $3? (B) How much does it cost to buy 36 boxes of car parts if each box contains 4 parts and each part sells for $3? (C) How much does it cost to buy a car part that lists at $36 if there is a $4 discount and a $3 cash bonus? ____	C

	Instrument	Correct Response
RWO 1608 VM	Which one of the following word problems can be solved by using the number sentence n = 15 - 5 - 5 - 3? (A) The temperature went up 15°C, up 5°C more, down 5°C, and down 3°C more. What was the overall change? (B) The temperature went down 15°C, down 5°C more, down another 5°C, and down a further 3°C. What was the overall change? (C) If the temperature was 15°C higher the first day, 5°C lower the next day, 5°C lower the next day, and 3°C lower the next, what was the overall change? _____	C
RWO 1609 VR	Make up a story problem that can be solved by using the number sentence n = 50 - 5 - 2 - 1. _____ _____ _____ _____ _____	Various solutions

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Operations	Applications

Objective — Given an expression involving up to and including three multiplications, the student will identify or create a word problem that can be solved using the expression.

	Instrument	Correct Response
RWO 1701 VM	Which one of the following word problems can be solved by using the expression 12 x 3? (A) There are 12 children. There are 3 candies for each. How many candies in all? (B) Mary has 12 candies. Jane has 3 candies. How many candies in all? (C) There are 12 candies. There are 3 children. How many candies for each one? (D) Mary has 12 candies. Jane has 3 candies. How many more does Mary have? ____	A
RWO 1702 VR	Make up a story problem that can be solved by using the expression 24 x 6. _____ _____ _____ _____ _____	Various solutions

	Instrument	Correct Response
RWO 1703 VR	Make up a story problem that can solved by using the number sentence n = 10 x 10. _____ _____ _____ _____ _____	Various solutions
RWO 1704 VM	Which one of the following word problems can be solved by using the expression 24 x 6 x 2? (A) Sheila made $24 at her job. Sheila worked 2 h/d. Sheila worked 6d. What was her hourly rate? (B) Sheila made $24 the first day. Sheila made $6 the second day. Sheila made $2 the last day. How much did she make in all? (C) Sheila worked 24 d at her job. Sheila worked 6 h/d. Sheila made $2/h. How much did she make in all? ____	C
RWO 1705 VR	Make up a story problem that can be solved by using the expression 6 x 4 x 3. _____ _____ _____ _____ _____	Various solutions

	Instrument	Correct Response
RWO 1706 VM	Which one of the following word problems can be solved by using the number sentence n = 10 x 10 x 10? (A) How many grams are there in 1 t? (B) How many cents are there in $100? (C) How many seconds are there in 1 h? (D) How many millimetres are there in 1 m? _____	D
RWO 1707 VR	Make up a story problem that can be solved by using the number sentence n = 100 x 10 x 10. _____ _____ _____ _____ _____	Various solutions
RWO 1708 VM	Which one of the following word problems can be solved by using the expression 5 x 4 x 3 x 2? (A) There are 5 tins in one carton, 4 tins in the second carton, 3 tins in the third carton, and 2 tins in the last carton. How many tins in all? (B) There are 5 cartons, each having 4 layers of 3 rows of 2 tins. How many tins in all? (C) There are 5 cartons holding 4 packages of 3 tins each, and 4 packages of 2 tins each. How many tins in all? _____	B

	Instrument	Correct Response
RWO 1709 VR	Make up a story problem that can be solved by using the number expression 20 x 2 x 2 x 2. _____ _____ _____ _____ _____	Various solutions
RWO 1710 VM	Which one of the following word problems can be solved by using the number sentence n = 3 x 2 x 2 x 2? (A) What is the final value of a $3 stamp after 3 years if it doubles in value every year? (B) What is the final value of a $3 stamp after 2 years if its value increases by $2 every year? (C) What is the final value of a $3 stamp after 3 years if it triples in value every year? ____	A
RWO 1711 VR	Make up a story problem that can be solved by using the number sentence n = 2 x 5 x 8 x 4. _____ _____ _____ _____ _____	Various solutions

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Operations	Applications

Objective — Given an expression involving up to and including three divisions, the student will identify or create a word problem that can be solved using this expression.

	Instrument	Correct Response
RWO 1801 VM	Which one of the following word problems can be solved by using the expression $30 \div 6$? (A) There are 30 boys in a class. There are 6 girls in the class. How many more boys are there? (B) There are 30 children in a class. There are 6 tables in the class. How many children at each table? (C) There are 30 children in a class. There are 6 books for each child. How many books altogether? _____	B
RWO 1802 VR	Make up a story problem that can be solved by using the expression $50 \div 10$. _____ _____ _____ _____ _____	Various solutions

	Instrument	Correct Response
RWO 1803 VR	Make up a story problem that can be solved by using the number sentence n = 100 ÷ 4. _____ _____ _____ _____ _____	Various solutions
RWO 1804 VM	Which one of the following word problems can be solved by using the expression 24 ÷ 4 ÷ 3? (A) There are 24 donuts in a bag. There are 4 groups in a class. There are 3 children in each group. How many more donuts are there? (B) There are 24 donuts in a bag. There are 4 groups in a class. There are 3 children in each group. How many donuts each are there? (C) There are 24 plain donuts in a bag. There are 4 jelly donuts in the bag. There are 3 bags in all. How many children can be served one donut each? _____	B

	Instrument	Correct Response
RWO 1805 VR	Make up a story problem that can be solved by using the expression 50 ÷ 10 ÷ 5. _____ _____ _____ _____ _____	Various solutions
RWO 1806 VR	Make up a story problem that can be solved by using the number sentence n = 1000 ÷ 10 ÷ 10. _____ _____ _____ _____ _____	Various solutions
RWO 1807 VR	Make up a story problem that can be solved be using the number expression 24 ÷ 6 ÷ 2 ÷ 2? _____ _____ _____ _____ _____	Various solutions

	Instrument	Correct Response
RWO 1808 VM	Which one of the following word problems can be solved by using the number sentence $n = 2400 \div 2 \div 2 \div 2$? (A) What is the value of a $2400 car after 3 years if it doubles in value every year? (B) What is the value of a $2400 car after 3 years if it loses one half its value every year? (C) What is the value of a $2400 car after 3 years if it triples in value every year? _____	B
RWO 1809 VR	Make up a story problem that can be solved by using the number sentence $n = 180 \div 5 \div 4 \div 3$. _____ _____ _____ _____ _____	Various solutions

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Operations	Applications

Objective — Given an expression involving two or three different operations, the student will identify or create a word problem that can be solved using the expression.

	Instrument	Correct Response
RWO 1901 VM	Which one of the following word problems can be solved by using the expression 200 - 50 + 60? (A) Don's bank balance was $200. He deposited $50. Then he wrote a cheque for $60. What was his new balance? (B) Don's bank balance was $200. He deposited $50. Then he deposited $60. What was his new balance? (C) Don's bank balance was $200. He wrote a cheque for $50. Then he deposited $60. What was his new balance? _____	C
RWO 1902 VR	Make up a story problem that can be solved by using the expression 100 - 70 - 50. _____ _____ _____ _____ _____	Various solutions

	Instrument	Correct Response
RWO 1903 VM	Which one of the following word problems can be solved by using the number sentence $n = 26 - 4 + 6$? (A) If the temperature started off at 26°C, rose 4°C, and then rose 6°C, what was the final reading? (B) If the temperature started off at 26°C, fell 4°C, and then rose 6°C, what was the final reading? (C) If the temperature started off at 26°C, fell 4°C, and then fell 6°C, what was the final reading? _____	B
RWO 1904 VR	Make up a story problem that can solved by using the number sentence $n = 50 + 30 - 20$. _____ _____ _____ _____ _____	Various solutions

	Instrument	Correct Response
RWO 1905 VM	Which one of the following word problems can be solved by using the expression 300 x 15 ÷ 5? (A) A store receives 300-kg of potatoes and packages them in 15-kg bags. If they are sold in lots of 5 bags, how many lots do they have for sale? (B) A store receives 300 lots of potatoes packed in 15-kg bags. If there are 5 bags in each lot, how many kilograms of potatoes do they have for sale? (C) A store receives 300 lots of potatoes packed in 15-kg bags. If the store repacks the potatoes in 5-kg packs, how many packs will they have to sell? _____	C
RWO 1906 VR	Make up a story problem that can be solved by using the number sentence n = 12 x 5 ÷ 4. _____ _____ _____ _____ _____	Various solutions

	Instrument	Correct Response
RWO 1907 VM	Which one of the following word problems can be solved by using the expression (25 - 5) x 4? (A) There is a $4 reduction on the price of a $25 shirt. How much will 5 shirts cost? (B) There is a $5 tax on the cost of a $25 shirt. How much will 4 shirts cost? (C) There is a $5 reduction in the price of a $25 shirt. How much will 4 shirts cost? _____	C
RWO 1908 VR	Make up a story problem that can be solved by using the expression 20 x (5 + 7). _____ _____ _____ _____ _____	Various solutions

	Instrument	Correct Response
RWO 1909 VM	Which one of the following word problems can be solved by using the expression (200 + 14) ÷ 2? (A) Two sisters share the cost of a $200 stereo. If there is a $14 discount how much does each pay? (B) Two sisters share the cost of a $200 stereo. If there is a $14 tax how much does each pay? (C) Two sisters buy identical stereos for $200 each. If there is a $14 discount how much does each pay? _____	B
RWO 1910 VR	Make up a story problem that can be solved by using the expression (36 - 6) ÷ 3. _____ _____ _____ _____ _____	Various solutions

	Instrument	Correct Response
RWO 1911 VM	Which one of the following word problems can be solved by using the number sentence $n = 500 \div 10 - 10$? (A) When a clerk divided 500 pieces of advertising into 10 equal piles, 2 pieces were found to be damaged and were removed. How many pieces were left in each pile? (B) When a clerk divided 500 pieces of advertising into 10 equal piles, 10 pieces in each pile were found to be damaged and were removed. How many pieces were left in each pile? (C) When a clerk divided 500 pieces of advertising into 10 equal piles, 2 pieces in each pile were found to be damaged and were removed. How many pieces were left in each pile? _____	B
RWO 1912 VR	Make up a story problem that can be solved by using the expression 100 + 50 - 40 - 20. _____ _____ _____ _____ _____	Various solutions

	Instrument	Correct Response
RWO 1913 VM	Which one of the following word problems can be solved by using the number sentence n = 80 + 12 - 8 + 4? (A) On Monday shares of Super School Books were selling at $80. In the next trading sessions the shares lost $12, lost $8, and then rose $4. What was the last selling price? (B) On Monday shares of Super School Books were selling at $80. In the next trading sessions the shares rose $12, rose $8, and then lost $4. What was the last selling price? (C) On Monday shares of Super School Books were selling at $80. In the next trading sessions the shares rose $12, lost $8, and then rose $4. What was the last selling price? _____	C
RWO 1914 VR	Make up a story problem that can be solved by using the number sentence n = 100 - 40 + 30 - 20. _____ _____ _____ _____ _____	Various solutions

	Instrument	Correct Response
RWO 1915 VM	Which one of the following word problems can be solved by using the expression (6 + 7 + 5) x 8? (A) Mary worked 6 h on the first day, 7 h on the second, and 8 h on the third. If she made $5/h, how much did she earn? (B) Mark worked 6 h on the first day, 7 h on the second, and 5 h on the third. If she made $8/h, how much did she earn? (C) Mary worked 8 h on the first day, 7 h on the second, and 5 h on the third. If she made $6/h, how much did she earn? _____	B
RWO 1916 VR	Make up a story problem that can be solved by using the expression (20 + 25 + 35) - 3. _____ _____ _____ _____ _____	Various solutions

	Instrument	Correct Response
RWO 1917 VM	Which one of the following word problems can be solved by using the number sentence $n = 2 \times 7 + 4 - 3$? (A) Bob had 2 weeks and 4 d of vacation. If he spent 3 extra days because of car trouble, how long did he actually vacation? (B) Bob had 2 weeks and 3 d of vacation. If he lost 4 d because of car trouble, how long did he actually vacation? (C) Bob had 2 weeks and 4 d of vacation. If he lost 3 d because of car trouble, how long did he actually vacation? _____	C
RWO 1918 VR	Make up a story problem that can be solved by using the number sentence $n = 50 - 5 + 4 - 3$. _____ _____ _____ _____ _____	Various solutions

	Instrument	Correct Response
RWO 1919 VM	Which one of the following word problems can be solved by using the expression $3 \times 20 + 4 \times 15$? (A) Sandy bought 4 pairs of jeans at \$20 each and 3 tops at \$15 each. How much did she spend altogether? (C) Sandy bought 3 pairs of jeans at \$20 each and 4 tops at \$15 each. How much more did the jeans cost? (C) Sandy bought 3 pairs of jeans at \$20 each and 4 tops at \$15 each. How much did she spend altogether? ____	C
RWO 1920 VR	Make up a story problem that can be solved by using the expression $(4 \times 15) - (3 \times 5)$. _____ _____ _____ _____ _____	Various solutions
RWO 1921 VM	Which one of the following word problems can be solved by using the number sentence $n = (72 \div 6) - (48 \div 8)$? (A) Sue made \$72 by working 8 h while Tom made \$48 by working 6 h. How much per hour did they earn together? (B) Sue made \$72 by working 6 h while Tom made \$48 by working 6 h. How much per hour did they earn together? (C) Sue made \$48 by working 8 h while Tom made \$72 by working 6 h. How much more per hour did Tom earn? ____	C

	Instrument	Correct Response
RWO 1922 VR	Make up a story problem that can be solved by using the number sentence $n = (50 \div 5) + (15 \div 5)$. _____ _____ _____ _____ _____	Various solutions
RWO 1923 VM	Which one of the following word problems can be solved by using the expression $720 \div (5 \times 6 \times 4)$? (A) Joe earns \$720 by working 6 h a day and 5 d a week for 4 weeks. How much does he make per hour? (B) Joe earns \$720 by working 5 d one week, 6 d the second week, and 4 d the third week. How much does he earn per day? (C) Joe earns \$720 by working 5 six-hour days one week and 5 four-hour days the next week. How much does he earn per hour? ____	A

	Instrument	Correct Response
RWO 1924 VR	Make up a story problem that can be solved by using the expression 4 x 24 ÷ 3 ÷ 2. _____ _____ _____ _____ _____	Various solutions
RWO 1925 VR	Make up a story problem that can be solved by using the number sentence n = (9 x 6) ÷ (3 x 2). _____ _____ _____ _____ _____	Various solutions

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Decimals	Operations	Skills

Objective — Given a whole number and a decimal up to and including thousandths, the student will calculate their sum.

	Instrument	Correct Response
RDO 0101 VM	3475 + 0.6 = (A) 4075.0 (B) 3535.0 (C) 3481.0 (D) 3475.6 _____	D
RDO 0102 VR	75 + 7.2 = _____	82.2
RDO 0103 VM	2 + 175.7 = (A) 375.7 (B) 195.7 (C) 177.7 (D) 175.9 _____	C
RDO 0104 VR	849 + 56.8 = _____	905.8
RDO 0105 VM	785 + 6.38 = (A) 1423.00 (B) 848.80 (C) 791.38 (D) 785.638 _____	C

	Instrument	Correct Response
RDO 0106 VR	9 + 0.74 = _____	9.74
RDO 0107 VM	39 + 26.52 = (A) 26.91 (B) 30.42 (C) 65.52 (D) 416.52 _____	C
RDO 0108 VR	2143 + 232.06 = _____	2375.06
RDO 0109 VM	42 + 0.007 = (A) 49.000 (B) 42.700 (C) 42.070 (D) 42.007 _____	D
RDO 0110 VR	7069 + 4.015 = _____	7073.015
RDO 0111 VM	587 + 10.879 = (A) 11.446 (B) 16.749 (C) 69.579 (D) 597.879 _____	D
RDO 0112 VR	6 + 395.608 = _____	401.608

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Decimals	Operations	Skills

Objective — Given two decimals up to and including thousandths, the student will calculate their sum.

	Instrument	Correct Response
RDO 0201 VM	3.7 + 0.9 = (A) 3.16 (B) 3.63 (C) 4.6 (D) 9.6 _____	C
RDO 0202 VR	60.31 + 5.2 = _____	65.51
RDO 0203 VM	0.764 + 36.7 = (A) 38.364 (B) 37.824 (C) 37.464 (D) 36.834 _____	C
RDO 0204 VR	3.3 + 0.42 = (A) 3.27 (B) 3.45 (C) 3.54 (D) 3.72 _____	D
RDO 0205 VR	159.57 + 2.65 = _____	162.22

	Instrument	Correct Response
RDO 0206 VM	45.137 + 32.02 = (A) 77.139 (B) 77.157 (C) 77.319 (D) 77.337 _____	B
RDO 0207 VM	58.6 + 0.904 = (A) 58.910 (B) 58.964 (C) 59.504 (D) 59.540 _____	C
RDO 0208 VR	4.32 + 5.233 = _____	9.553
RDO 0209 VM	629.465 + 77.576 = (A) 7087.032 (B) 707.041 (C) 707.212 (D) 707.221 _____	B
RDO 0210 VM	0.213 + 75.036 = (A) 75.573 (B) 75.519 (C) 75.348 (D) 75.249 _____	D

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Decimals	Operations	Skills

Objective — Given a whole number and a decimal up to and including thousandths, the student will calculate their difference.

	Instrument	Correct Response
RDO 0301 VM	75.6 - 32 = (A) 73.3 (B) 72.4 (C) 56.6 (D) 43.6 _____	D
RDO 0302 VR	346.2 - 159 = _____	187.2
RDO 0303 VM	8.9 - 7 = (A) 1.2 (B) 1.9 (C) 2.8 (D) 8.2 _____	B
RDO 0304 VR	2847.5 - 2679 = _____	168.5
RDO 0305 VM	43.18 - 38 = (A) 42.80 (B) 39.38 (C) 5.81 (D) 5.18 _____	D

	Instrument	Correct Response
RDO 0306 VR	4976.72 - 3451 = _____	1525.72
RDO 0307 VM	801.99 - 196 = (A) 800.03 (B) 785.04 (C) 782.39 (D) 605.99 _____	D
RDO 0308 VR	3.07 - 3 = _____	0.07
RDO 0309 VM	736.412 - 732 = (A) 40.412 (B) 31.412 (C) 13.412 (D) 4.412 _____	D
RDO 0310 VR	27.067 - 17 = _____	10.067
RDO 0311 VM	3001.789 - 1666 = (A) 1334.789 (B) 1334.879 (C) 1335.789 (D) 1335.879 _____	C
RDO 0312 VR	9.606 - 6 = _____	3.606

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Decimals	Operations	Skills

Objective — Given two decimals up to and including thousandths, the student will calculate their difference.

	Instrument	Correct Response
RDO 0401 VM	37.0 - 0.2 = (A) 15.0 (B) 17.0 (C) 36.8 (D) 35.0 _____	C
RDO 0402 VR	5476.7 - 225.70 = _____	5251
RDO 0403 VM	8.2 - 5.762 = (A) 2.528 (B) 2.438 (C) 2.258 (D) 2.240 _____	B
RDO 0404 VR	768.9 - 34.3 = _____	734.6
RDO 0405 VM	7.66 - 5.6 = (A) 7.10 (B) 7.01 (C) 2.60 (D) 2.06 _____	D

	Instrument	Correct Response
RDO 0406 VR	823.21 - 555.36 = _____	267.85
RDO 0407 VM	5789.68 - 3436.520 = (A) 2352.084 (B) 2352.48 (C) 2353.088 (D) 2353.16 _____	D
RDO 0408 VR	45.06 - 38.97 = _____	6.09
RDO 0409 VM	6002.345 - 996.5 = (A) 3962.655 (B) 5006.340 (C) 5006.295 (D) 5005.845 _____	D
RDO 0410 VR	98.756 - 78.35 = _____	20.406
RDO 0411 VM	430.001 - 106.755 = (A) 332.246 (B) 323.426 (C) 323.246 (D) 322.346 _____	C

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Decimals	Operations	Skills

Objective — Given a whole number and a decimal up to and including thousandths, the student will calculate their product.

	Instrument	Correct Response
RDO 0501 VM	1000 x 0.4 = (A) 0.4 (B) 4 (C) 40 (D) 400 ____	D
RDO 0502 VR	50 x 2.8 = _____	140
RDO 0503 VM	3 x 321.3 = (A) 321.9 (B) 961.3 (C) 963.3 (D) 963.9 ____	D
RDO 0504 VR	78.9 x 437	34 479.3

	Instrument	Correct Response
RDO 0505 VM	3 x 0.58 = (A) 5.24 (B) 3.58 (C) 1.74 (D) 1.47 _____	C
RDO 0506 VR	100 x 7.26 = _____	726
RDO 0507 VM	56 x 15.48 = (A) 8668.8 (B) 866.88 (C) 86.688 (D) 8.6688 _____	B
RDO 0508 VM	10 x 0.005 = (A) 5 (B) 0.5 (C) 0.05 (D) 0.005 _____	C
RDO 0509 VR	850 x 0.608	516.8
RDO 0510 VR	9 x 8.678 = _____	78.102
RDO 0511 VR	1000 x 0.123 = _____	123

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Decimals	Operations	Skills

Objective — Given two decimals of less than five digits, the student will calculate their product.

	Instrument	Correct Response
RDO 0601 VM	9.6 x 0.8 = (A) 8.80 (B) 8.52 (C) 7.68 (D) 7.26 _____	C
RDO 0602 VR	30.22 x 1.2 = _____	36.264
RDO 0603 VM	0.478 x 25.5 = (A) 12.0890 (B) 12.1890 (C) 1.2089 (D) 1.2189 _____	B
RDO 0604 VM	12.3 x 0.13 = (A) 15.890 (B) 15.990 (C) 1.589 (D) 1.599 _____	D

	Instrument	Correct Response
RDO 0605 VM	3.215 x 12.32 = (A) 39.5988 (B) 39.6088 (C) 39.6188 (D) 39.6288 _____	B
RDO 0606 VM	286.3 x 0.009 = (A) 25.6670 (B) 25.7670 (C) 2.5667 (D) 2.5767 _____	D
RDO 0607 VR	0.035 x 0.24	0.0084
RDO 0608 VM	0.006 x 0.650 = (A) 0.3900 (B) 0.0390 (C) 0.0039 (D) 0.0009 _____	C
RDO 0609 VR	2.25 x 0.202	0.4545

	Instrument		Correct Response
RDO 0610 VM	0.324 x 0.025	(A) 0.0071 (B) 0.0081 (C) 0.071 (D) 0.081 ____	B

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Decimals	Operations	Skills

Objective — Given a decimal up to and including thousandths and a whole number divisor, the student will calculate the quotient.

	Instrument	Correct Response
RDO 0701 VM	0.6 ÷ 1000 = (A) 0.6 (B) 0.06 (C) 0.006 (D) 0.0006 ____	D
RDO 0702 VR	Find 5.0 ÷ 300 correct to 2 decimal places. _____	0.02
RDO 0703 VM	84.4 ÷ 4 = (A) 0.211 (B) 2.11 (C) 21.1 (D) 211.0 ____	C

	Instrument	Correct Response
RDO 0704 VM	0.76 ÷ 20 = (A) 0.0038 (B) 0.038 (C) 0.38 (D) 3.8 ____	B
RDO 0705 VM	76.20 ÷ 100 = (A) 76.2 (B) 7.62 (C) 0.762 (D) 0.0762 ____	C
RDO 0706 VM	0.008 ÷ 4 = (A) 0.2 (B) 0.02 (C) 0.002 (D) 0.0002 ____	C
RDO 0707 VM	6.903 ÷ 10 = (A) 690.3 (B) 69.03 (C) 6.903 (D) 0.6903 ____	D
RDO 0708 VR	$62\overline{)195.3}$	3.15

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Decimals	Operations	Skills

Objective — Given two decimals of less than five digits, the student will calculate the quotient.

	Instrument	Correct Response
RDO 0801 VM	57.6 ÷ 0.2 = (A) 2.88 (B) 28.8 (C) 288.0 (D) 2880.0 _____	C
RDO 0802 VM	75.50 ÷ 0.25 = (A) 0.302 (B) 3.02 (C) 30.2 (D) 302.0 _____	D
RDO 0803 VM	3.875 ÷ 38.75 = (A) 0.001 (B) 0.01 (C) 0.1 (D) 1.0 _____	C
RDO 0804 VR	$0.08\overline{)75.696}$	946.2

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Decimals	Operations	Applications

Objective Given a word problem involving up to and including three additions, the student will solve the problem.

	Instrument	Correct Response
RDO 0901 VR	Bob's mass was 47.2 kg last month. He gained 0.9 kg this month. What is Bob's mass now? _____	48.1 kg
RDO 0902 VM	John rode his bicycle for 17.3 km and then he pushed it for 3.4 km. How far did he travel altogether? (A) 207 km (B) 20.7 km (C) 20.07 km (D) 13.9 km ____	B
RDO 0903 VM	Lloyd is making bookshelves. One shelf is to be 2.5 m long. Another shelf is to be 4.3 m long. The last shelf is to be 6.8 m long. What length of shelving is needed? (A) 135 m (B) 52.1 m (C) 36.1 m (D) 13.6 m ____	D

	Instrument	Correct Response
RDO 0904 VM	During her holidays Jill bought 32.6 L of gas on Monday. She bought 52.9 L of gas on Tuesday, 44.3 L of gas on Wednesday, and 47.8 L of gas on Thursday. How much gas did she buy altogether? (A) 236.2 L (B) 175.2 L (C) 177.6 L (D) 187.6 L ____	C
RDO 0905 VM	Greta's family is going camping. They bought a tent for $96.30, a sleeping bag for $53.50, dishes for $17.12, and a campstove for $23.54. How much did they spend? (A) $148.64 (B) $170.36 (C) $180.46 (D) $190.46 ____	D

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Decimals	Operations	Applications

Objective Given a word problem involving up to and including three subtractions, the student will solve the problem.

	Instrument	Correct Response
RDO 1001 VR	My father's car has 18.5 L of gas in the tank. If the tank holds 52.8 L, how many litres are needed to fill the tank? _____	34.3
RDO 1002 VR	Nicole has 120 m of rope. She used 30.6 m to tie up her boat and 19.4 m to make a swing. How much rope is left? _____	70.0 m
RDO 1003 VM	George had $301.80 in the bank. He withdrew $25.00 on Wednesday. He wrote a cheque for $78.48 on Thursday. How much was left in his account? (A) $206.38 (B) $198.32 (C) $196.28 (D) $248.32 ____	B

	Instrument	Correct Response
RDO 1004 VM	Hillcrest School's relay team ran a 400 m race. Bill ran the first leg in 15.2 s. Rob ran the second leg in 16.1 s. Gary ran the third leg in 14.9 s. Jim ran the final leg in 14.6 s. How much longer did Rob take to run 100 m than Jim? (A) 1.5 s (B) 0.9 s (C) 0.6 s (D) 0.3 s _____	A

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Decimals	Operations	Applications

Objective — Given a word problem involving up to and including three multiplications, the student will solve the problem.

	Instrument	Correct Response
RDO 1101 VM	At a used book sale John bought 10 books for \$0.35 each. How much did he spend altogether? (A) \$0.35 (B) \$2.50 (C) \$3.50 (D) \$35.00 ____	C
RDO 1102 VM	Mary bought 9 L of milk at the supermarket. The sale price was 3 L for \$2.19. How much did she pay for the milk? (A) \$19.71 (B) \$6.57 (C) \$4.38 (D) \$2.19 ____	B
RDO 1103 VR	If carpet costs \$15.95/m^2 installed, what is the cost of carpeting a room that is 4.5 m by 5.2 m? _____	\$373.23

	Instrument	Correct Response
RDO 1104 VR	Mary is paid \$3.85/h. She works 6 h a day, 5 d a week, 4 weeks in a month. How much does she earn each month? _____	\$462.00
RDO 1105 VR	The mass of water is 1000 kg/m^3. The mass of mercury is about 13.6 times that of water. What is the mass of 1 m^3 of mercury? _____	13 600 kg
RDO 1106 VM	Topsoil costs \$11.50/m^3. What will it cost to buy a full load from a truck having a box that is 2 m by 2 m by 2.8 m? (A) \$128.80 (B) \$123.20 (C) \$78.20 (D) \$36.20 ____	A

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Decimals	Operations	Applications

Objective — Given a word problem involving up to and including three divisions, the student will solve the problem.

	Instrument	Correct Response
RDO 1201 VR	Susan's class collected $100 selling tickets. Each ticket sold for $2.50. How many tickets did they sell? _____	40
RDO 1202 VM	Jim travels 150 km in 2.5 h. What is his average speed? (A) 375 km/h (B) 75 km/h (C) 60 km/h (D) 45 km/h ____	C
RDO 0203 VM	A car uses 1 L of gasoline to travel 10.5 km. How much gas will be needed for a trip of 231 km? (A) 21 L (B) 2.2 L (C) 23.1 L (D) 22 L ____	D

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Fractions	Operations	Skills

Objective Given two fractions, the student will calculate their sum.

	Instrument	Correct Response
RFO 0101 VM	$\frac{2}{7} + \frac{3}{7} =$ (A) $\frac{5}{14}$ (B) $\frac{6}{14}$ (C) $\frac{5}{7}$ (D) $\frac{6}{7}$ ____	C
RFO 0102 VM	$\frac{1}{2} + \frac{3}{4} =$ (A) $\frac{3}{6}$ (B) $\frac{4}{6}$ (C) $\frac{5}{4}$ (D) $\frac{6}{4}$ ____	C

	Instrument	Correct Response
RFO 0103 VR	$\frac{3}{10} + \frac{3}{5} =$ _____	$\frac{9}{10}$
RFO 0104 VM	$\frac{2}{3} + \frac{1}{5} =$ (A) $\frac{2}{15}$ (B) $\frac{3}{15}$ (C) $\frac{10}{15}$ (D) $\frac{13}{15}$ ____	D
RFO 0105 VR	$\frac{3}{10} + \frac{7}{10} =$ _____	$\frac{10}{10}$ or equivalent
RFO 0106 VR	$\frac{1}{2} + \frac{3}{10} =$ _____	$\frac{8}{10}$ or equivalent

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Fractions	Operations	Skills

Objective Given two fractions, the student will calculate their difference.

	Instrument	Correct Response
RFO 0201 VR	$\frac{9}{10} - \frac{3}{10} =$ _____	$\frac{6}{10}$ or equivalent
RFO 0202 VM	$\frac{3}{5} - \frac{3}{10} =$ (A) $\frac{0}{10}$ (B) $\frac{1}{5}$ (C) $\frac{3}{10}$ (D) $\frac{2}{5}$ ____	C

	Instrument	Correct Response
RFO 0204 VM	$\frac{9}{8} - \frac{3}{8} =$ (A) $\frac{3}{16}$ (B) $\frac{1}{4}$ (C) $\frac{3}{8}$ (D) $\frac{3}{4}$ ____	D
RFO 0205 VR	$\frac{7}{10} - \frac{3}{10} =$	$\frac{4}{10}$ or equivalent
RFO 0206 VM	$\frac{7}{12} - \frac{1}{3} =$ (A) $\frac{2}{3}$ (B) $\frac{7}{15}$ (C) $\frac{2}{5}$ (D) $\frac{1}{4}$ ____	D
RFO 0207 VR	$\frac{9}{10} - \frac{2}{5} =$ _____	$\frac{5}{10}$ or equivalent

	Instrument	Correct Response
RFO 0208 VR	$\frac{7}{12} - \frac{3}{8} =$ (A) 0 (B) $\frac{1}{5}$ (C) $\frac{5}{24}$ (D) 1 ____	C
RFO 0209 VR	$\frac{4}{15} - \frac{1}{10} =$	$\frac{5}{30}$ or equivalent

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Fractions	Operations	Skills

Objective — Given two numbers, at least one a fraction, the student will calculate their product.

	Instrument	Correct Response
RFO 0301 VM	$\frac{3}{4} \times 5 =$ (A) $\frac{3}{20}$ (B) $\frac{3}{9}$ (C) $\frac{8}{4}$ (D) $\frac{15}{4}$ ____	D
RFO 0302 VR	$\frac{2}{3} \times 2 =$ _____	$\frac{4}{3}$ or $1\frac{1}{3}$

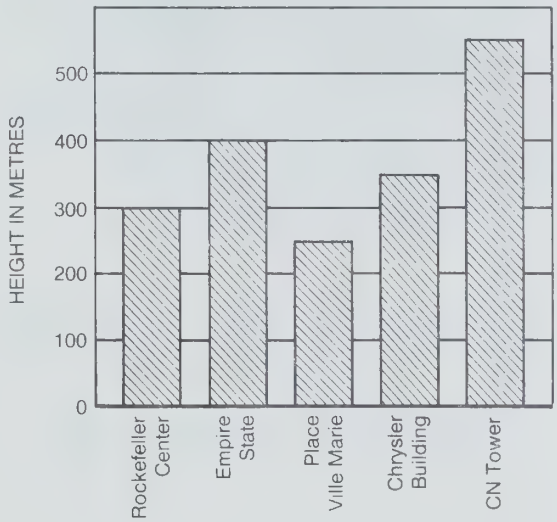
	Instrument	Correct Response
RFO 0303 VM	$\frac{2}{3} \times \frac{1}{5} =$ (A) $\frac{2}{15}$ (B) $\frac{3}{15}$ (C) $\frac{2}{8}$ (D) $\frac{3}{8}$ ____	A
RFO 0304 VR	$\frac{3}{4} \times \frac{1}{2} =$ _____	$\frac{3}{8}$
RFO 0305 VM	$\frac{3}{2} \times \frac{3}{7} =$ (A) $\frac{6}{14}$ (B) $\frac{9}{14}$ (C) $\frac{6}{9}$ (D) $\frac{9}{9}$ ____	B
RFO 0306 VR	$\frac{2}{5} \times \frac{4}{3} =$ _____	$\frac{8}{15}$

	Instrument	Correct Response
RFO 0307 VM	$\frac{3}{2} \times 12 =$ (A) $\frac{1}{8}$ (B) 2 (C) $\frac{15}{2}$ (D) 18 ____	D
RFO 0308 VR	$\frac{4}{5} \times 20 =$ _____	16
RFO 0309 VM	$\frac{1}{2} \times \frac{4}{5} =$ (A) $\frac{2}{5}$ (B) $\frac{1}{2}$ (C) $\frac{4}{7}$ (D) $\frac{5}{7}$ ____	A
RFO 0310 VR	$\frac{1}{3} \times \frac{3}{4} =$ _____	$\frac{1}{4}$

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Arrays	Skills

Objective Given a bar graph, the student will identify specific facts.

	Instrument	Correct Response
RWA 0101 DM	HEIGHTS OF STRUCTURES	



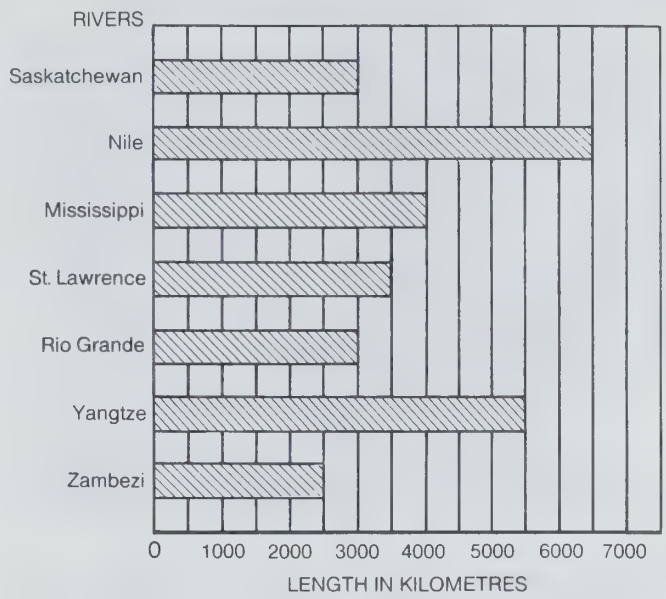
Use the above graph to answer questions (i), (ii), and (iii).

(i) The tallest structure is

(A) The Rockefeller Center
(B) The Empire State Building
(C) The CN Tower
(D) The Chrysler Building ____ C

	Instrument	Correct Response
	(ii) The height of the Chrysler Building is (A) 300 m (B) 350 m (C) 400 m (D) 450 m _____	B
	(iii) Which structure has a height of 300 m? (A) Place Ville Marie (B) The Empire State Building (C) The Chrysler Building (D) The Rockefeller Center _____	D

	Instrument	Correct Response
RWA 0102 DR	LENGTHS OF SEVEN MAJOR RIVERS	



Use the above graph to answer questions (i), (ii), and (iii).

(i) What is the name of the shortest river?

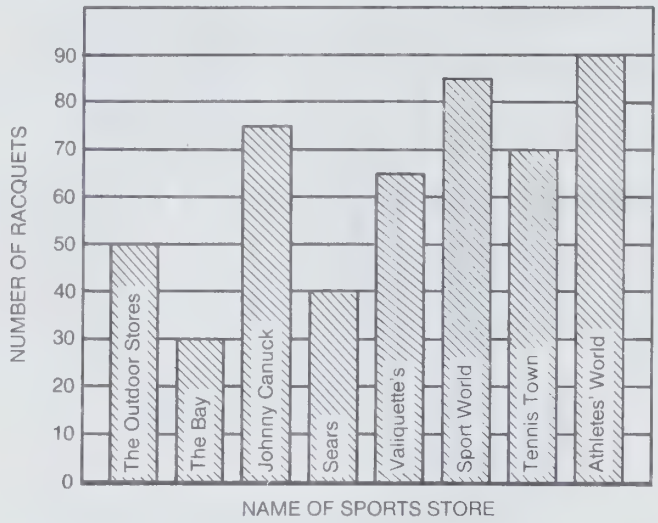
_____ Zambezi

(ii) What is the length of the Yangtze River?

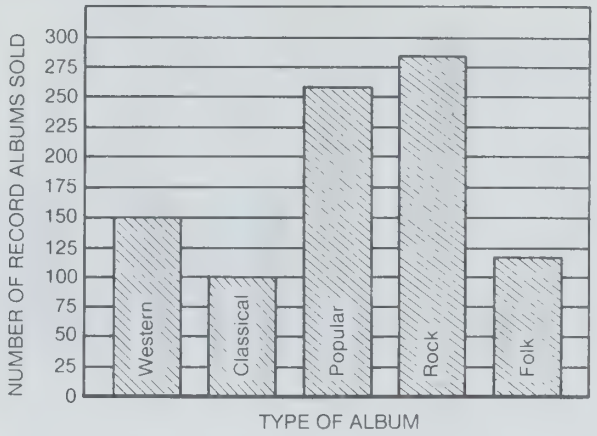
_____ 5500 km

(iii) Which river has a length of 3500 km?

_____ St. Lawrence

	Instrument	Correct Response
RWA 0103 DM	JUNE SALES OF TENNIS RACQUETS IN THE SPORTS STORES OF OTTAWA  Use the above graph to answer the questions (i), (ii), and (iii).	
	(i) How many racquets did Johnny Canuck sell during the month? (A) 65 (B) 70 (C) 75 (D) 80 ____	C
	(ii) Which store sold 85 racquets during the month? (A) Athlete's World (B) Johnny Canuck (C) Tennis Town (D) Sport World ____	D
	(iii) Which store had the second highest sales during the month? (A) Johnny Canuck (B) Athlete's World (C) Sport World (D) Tennis World ____	C

	Instrument	Correct Response
RWA 0104 DR	RECORD SALES FOR WEEK OF JUNE 14 TO JUNE 21	



Use the above graph to answer questions (i), (ii), and (iii).

(i) How many western albums were sold during the period?

_____ 150

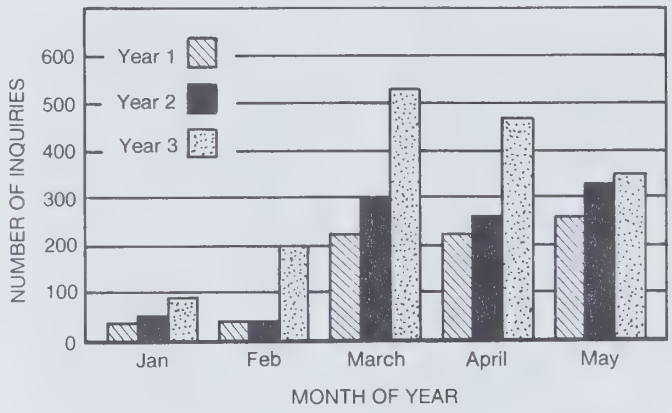
(ii) Which type of album sold 260 copies during the period?

_____ Popular

(iii) Which type of album sold the next to lowest number of copies?

_____ Folk

	Instrument	Correct Response
RWA 0105 DM	NUMBER OF TOURIST INQUIRIES ABOUT CANADA	



Use the above graph to answer questions (i), (ii), and (iii).

(i) In the second year which month shows the second highest number of inquiries?

(A) February
(B) March
(C) April
(D) May _____ B

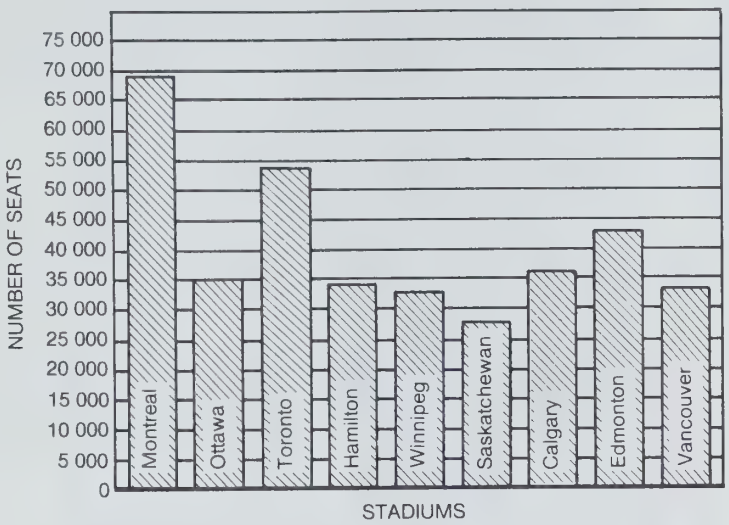
(ii) For each of the 3 years, which month shows at least 250 inquiries?

(A) February
(B) March
(C) April
(D) May _____ D

(iii) For each of the 3 years, which month shows an increase over the previous month in the number of inquiries received?

(A) February
(B) March
(C) April
(D) May _____ B

	Instrument	Correct Response
RWA 0106 DR	SEATING CAPACITIES AT CANADIAN FOOTBALL LEAGUE STADIUMS 1979.	



Use the above graph to answer questions (i), (ii), and (iii).

(i) Which two stadiums have the same seating capacity?

_____ | Winnipeg Vancouver

(ii) How many stadiums have seating capacities between 30 000 and 40 000?

_____ | 5

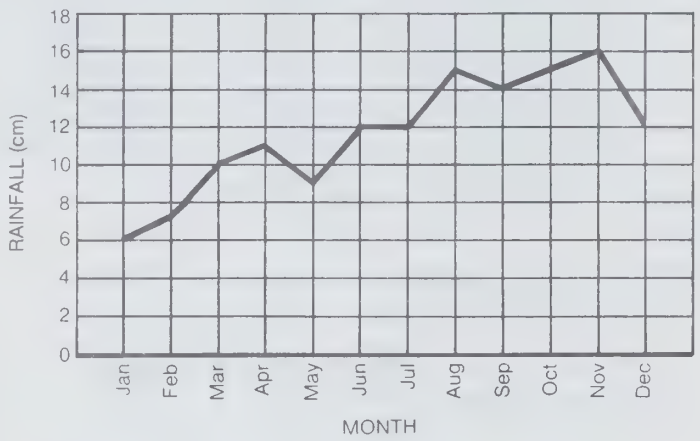
(iii) List the three largest stadiums in decreasing order of their seating capacities?

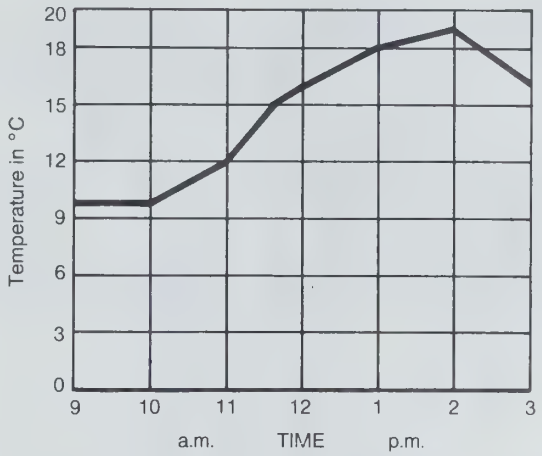
_____ | Montreal Toronto Edmonton

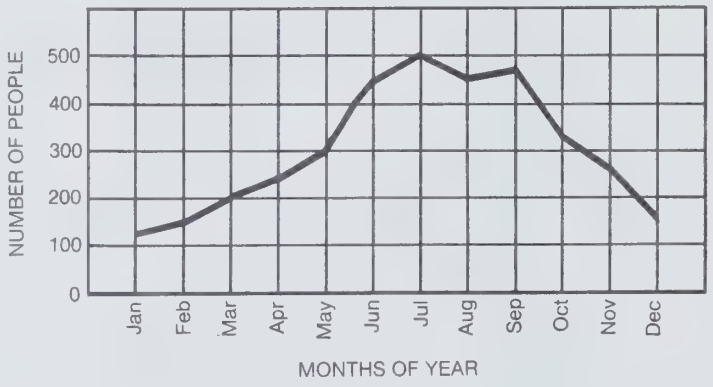
_____

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Arrays	Skills

Objective — Given a broken-line graph, the student will identify specific facts.

	Instrument	Correct Response
RWA 0201 DR	MONTHLY RAINFALL IN SOUTHERN ONTARIO  Use the above graph to answer questions (i), (ii), and (iii). (i) Which month had the least rain? _____	January
	(ii) How much rain fell in June? _____	12 cm
	(iii) Which months had a rainfall of 15 cm? _____	August October

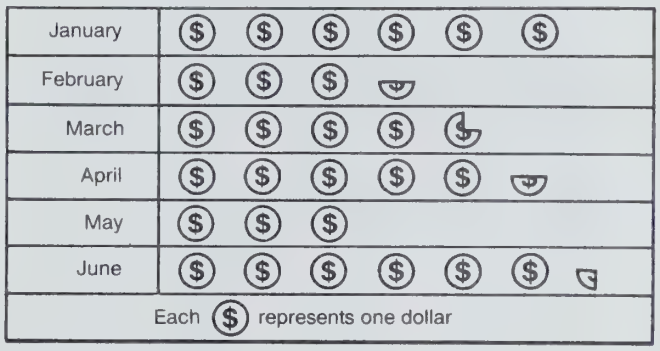
	Instrument	Correct Response
RWA 0202 DM	MAY 1: HOURLY TEMPERATURES  Use the above graph to answer questions (i), (ii), and (iii). (i) It was warmest at (A) 12:00 p.m. (B) 1:00 p.m. (C) 2:00 p.m. (D) 3:00 p.m. _____	C
	(ii) At 11:00 a.m. the temperature was (A) 10°C (B) 12°C (C) 14°C (D) 16°C _____	B
	(iii) The temperature was the same at (A) 12:00 noon and 1:00 p.m. (B) 11:00 a.m. and 12:00 noon (C) 10:00 a.m. and 11:00 a.m. (D) 9:00 a.m. and 10:00 a.m. _____	D

	Instrument	Correct Response
RWA 0203 DM	ATTENDANCE AT THE MUNICIPAL INDOOR SWIMMING POOL  Use the above graph to answer questions (i), (ii), and (iii). (i) The attendance was 400 or over in (A) April (B) June (C) October (D) December _____	B
	(ii) The second best month for pool attendance was (A) June (B) July (C) August (D) September _____	D
	(iii) Pool attendance grew fastest between the months of (A) April and May (B) May and June (C) June and July (D) July and August _____	B

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Arrays	Applications

Objective — Given a pictograph representation of a set of data, the student will identify specific facts.

	Instrument	Correct Response
RWA 0301 DM	JIMMY'S ALLOWANCE: JANUARY TO JUNE	



Use the above graph to answer questions (i), (ii), and (iii).

(i) In April Jimmy's allowance was

(A) $4.00 (C) $5.50
(B) $4.75 (D) $6.25

____ C

(ii) Jimmy received an allowance of $3.50 in the month of

(A) May (C) March
(B) April (D) February

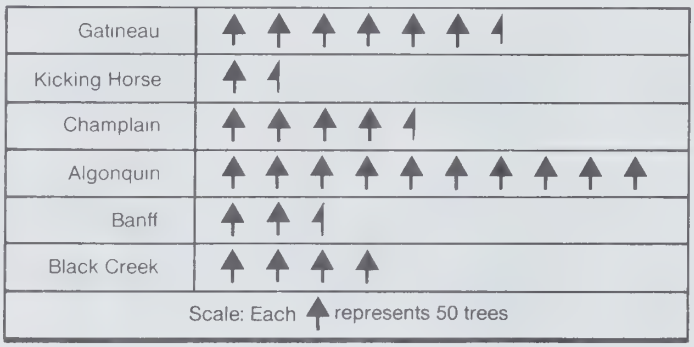
____ D

(iii) Jimmy received his smallest allowance for the month of

(A) February (C) April
(B) March (D) May

____ D

	Instrument	Correct Response
RWA 0302 DR	REFORESTATION IN CANADA'S PARKS	



Use the above graph to answer questions (i), (ii), and (iii).

(i) How many trees were planted in Champlain National Park?

_____ 225

(ii) In which parks were between 100 and 250 trees planted?

_____ Banff

_____ Black Creek

_____ Champlain

(iii) List the three parks having the greatest number of trees planted in decreasing order.

_____ Algonquin

_____ Gatineau

_____ Champlain

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Arrays	Skills

Objective Given a table of data, the student will identify specific facts.

	Instrument	Correct Response
RWA 0401 VM	RECORDS OF FOUR BASEBALL TEAMS	

TEAM	WON	LOST	TIED
Hawks	5	2	3
Cats	7	0	3
Tigers	4	5	1
Bucks	7	3	0

Use the above table to answer questions (i). (ii) and (iii).

(i) How many games did the Hawks lose?

(A) 2
(B) 3
(C) 5
(D) 10 _____ A

(ii) Which team won 7 games and lost 3?

(A) Hawks
(B) Cats
(C) Tigers
(D) Bucks _____ D

(iii) Which two teams had the same number of tied games?

(A) Bucks and Tigers
(B) Tigers and Cats
(C) Cats and Hawks
(D) Bucks and Hawks _____ C

	Instrument	Correct Response
RWA 0402 VR	PEE WEE HOCKEY RESULTS	

TEAM	WON	LOST	TIED
Hawks	8	6	1
Eagles	12	2	1
Owls	7	4	4
Gulls	6	7	2

Use the above chart to answer questions (i), (ii) and (iii).

(i) Which teams won more than half their games?

_____ Hawks Eagles

(ii) How many games did each team play?

_____ 15

(iii) Which teams lost between 5 and 10 games?

_____ Hawks Gulls

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Arrays	Skills

Objective — Given a table of data, the student will plan and/or construct a bar graph.

	Instrument	Correct Response
RWA 0501 VM	HAIR COLOUR: CLASS 2A	

COLOUR OF HAIR	NUMBER OF STUDENTS
Blonde	5
Brown	14
Black	8
Red	3

Use the above table to answer questions (i) and (ii).

(i) To construct a vertical bar graph representing these facts requires

(A) 3 bars
(B) 4 bars
(C) 5 bars
(D) 8 bars _____ — B

(ii) To construct a vertical bar graph representing these facts, having a scale of 1 square represents 1 person, requires at least

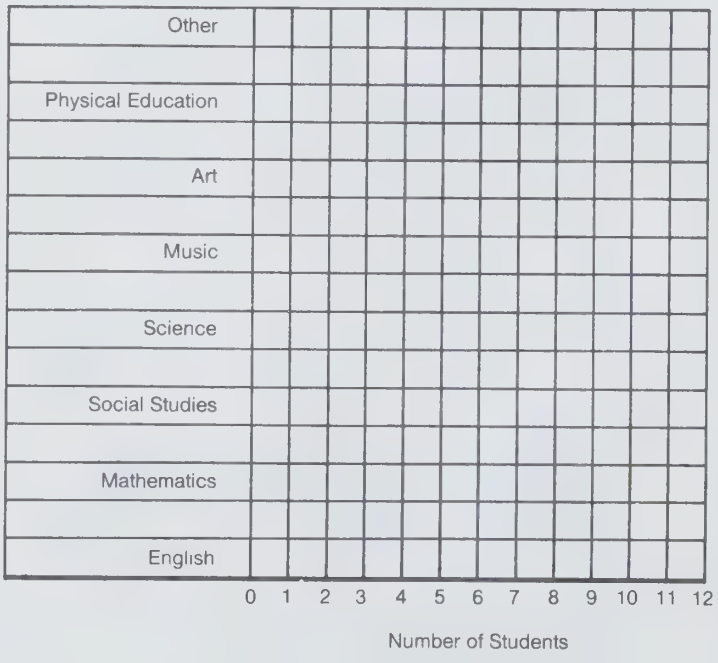
(A) 3 squares
(B) 5 squares
(C) 8 squares
(D) 14 squares _____ — D

	Instrument	Correct Response
RWA 0502 VS	FAVOURITE SUBJECTS: CLASS 5C	

Subject	Number of Students
English	2
Physical Education	5
Social Studies	3
Science	7
Music	4
Art	7
Mathematics	9
Other	3

On the grid below construct a horizontal bar graph representing the above data.

FAVOURITE SUBJECTS: CLASS 5C

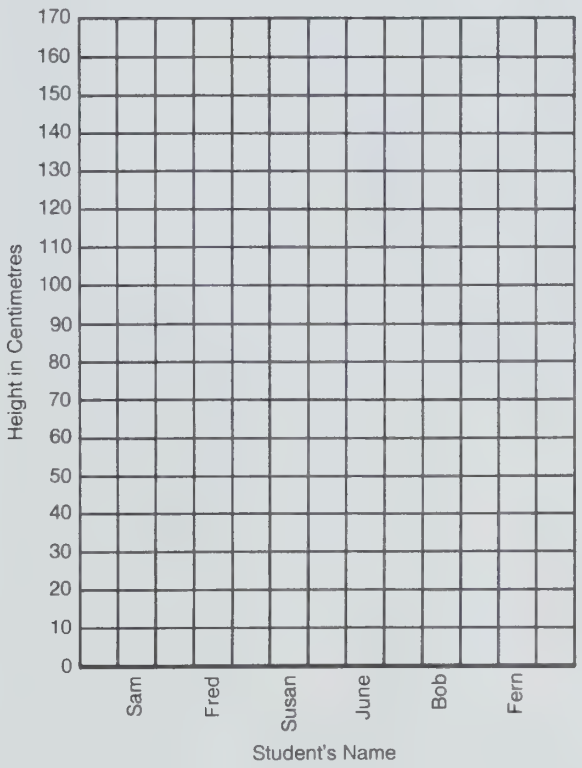


	Instrument	Correct Response
RWA 0503 VS	STUDENT HEIGHTS: CLASS 6A	

STUDENT'S NAME	HEIGHT
Sam	150 cm
Fred	130 cm
Susan	140 cm
June	140 cm
Bob	130 cm
Fern	140 cm

On the grid below construct a vertical bar graph representing the above data.

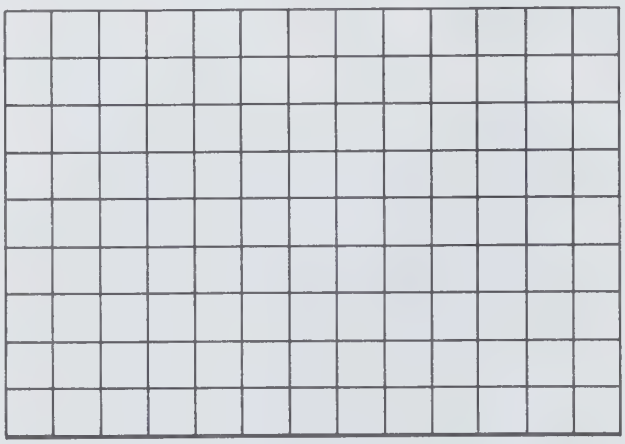
STUDENT HEIGHTS: CLASS 6A



	Instrument	Correct Response
RWA 0504 VS	FITNESS AWARDS TEST	

STUDENT'S NAME	NUMBER OF SIT-UPS IN 2 min
Abner	45
Betsy	75
Curt	90
Debbie	40
Ellen	60

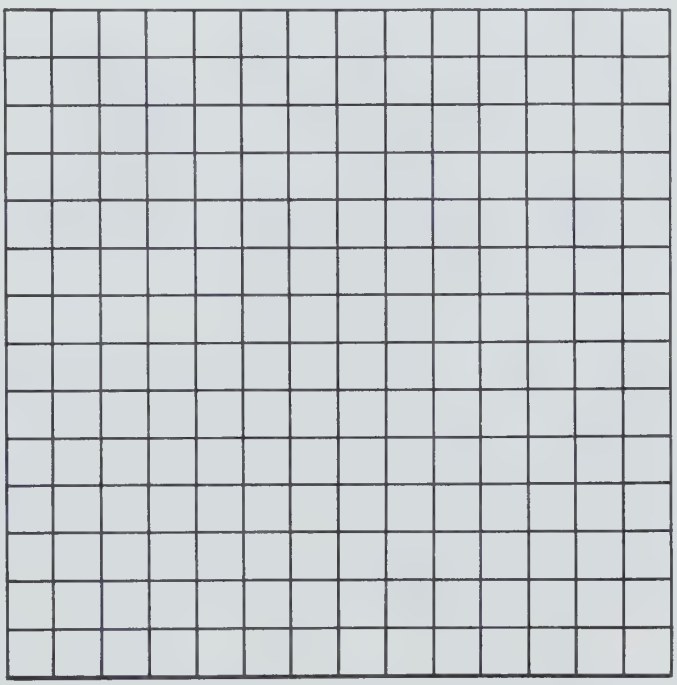
On the grid below construct a bar graph representing the above data. Use 1 square to represent 10 sit ups. Label the graph and give it a title.



	Instrument	Correct Response
RWA 0505 VS	SANDWICH SALES IN THE CAFETERIA DURING 4 DAYS	

TYPE OF SANDWICH	NUMBER SOLD
Grilled Cheese	40
Peanut Butter	45
Egg	20
Tuna Fish	25
Roast Beef	30
Other	20

On the grid below construct a bar graph representing the above data. Label your graph and give it a title.

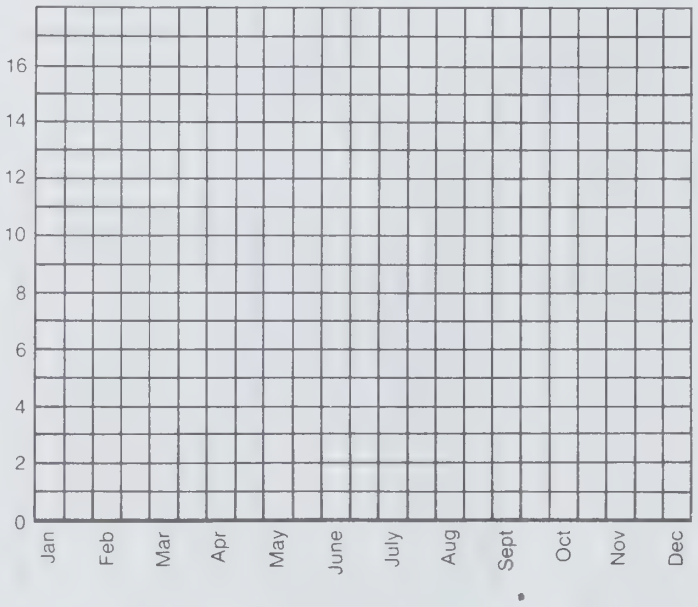


	Instrument	Correct Response
RWA 0506 VS	STUDENTS' BIRTHDAYS: Grade 6	

Birthday Month	Number of Students
January	13
February	14
March	5
April	11
May	16
June	17
July	7
August	13
September	12
October	10
November	14
December	3

On the grid below construct a bar graph representing the above data.

STUDENTS' BIRTHDAYS: GRADE 6



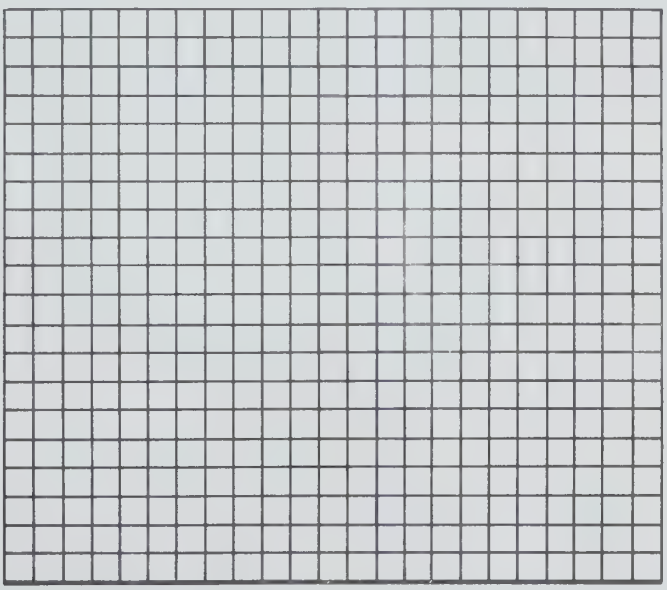
STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Arrays	Skills

Objective Given a table of data, the student will plan and/or construct a broken-line graph.

	Instrument	Correct Response
RWA 0601 VS	SUMMER CAMP ATTENDANCE	

YEAR	NUMBER OF CAMPERS
1982	825
1983	950
1984	1000
1985	975
1986	900

On the grid below construct a broken-line graph representing the above data. Label your graph and include a title.



STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Arrays	Skills

Objective — Given a table of data, the student will plan and/or construct a pictograph.

	Instrument	Correct Response
RWA 0701 VM	STUDENTS' AGES IN ROOM 5 Age in years: 8 | 9 | 10 Number of students: 8 | 10 | 6 To construct a simple pictograph representing these facts requires drawing at most (A) 24 symbols (B) 27 symbols (C) 33 symbols (D) 35 symbols ____	A

	Instrument	Correct Response
RWA 0702 VS	BIRTHDAYS IN MISS SMITH'S CLASS	

SEASON	NUMBER OF BIRTHDAYS
Winter	5
Spring	3
Summer	8
Autumn	4

On the grid below construct a pictograph representing the above data.

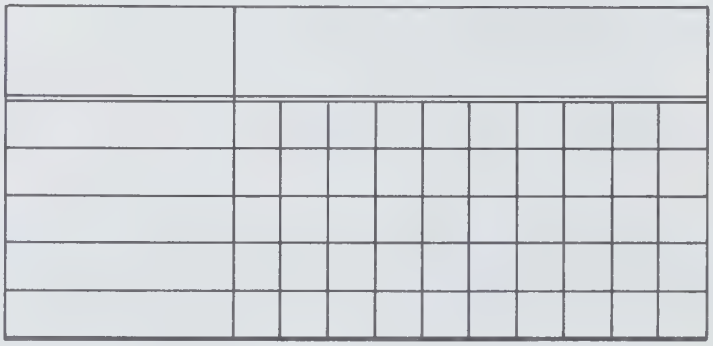
BIRTHDAYS IN MISS SMITH'S CLASS

SEASON	BIRTHDAYS △ represents 1 student								
Winter									
Spring									
Summer									
Autumn									

	Instrument	Correct Response
RWA 0703 VS	TV PROGRAM SURVEY IN RIVERVIEW SCHOOL	

Favourite TV Program	Number of Students
Hockey Night in Canada	40
Riptide	80
A-Team	70
Beachcombers	20
Cosby Show	90

On the grid below construct a pictograph representing the above data. Use the symbol Δ to represent 10 students. Be sure to label and title your graph.



STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Arrays	Skills

Objective — Given a set of random data, the student will plan and construct a tabular representation.

	Instrument	Correct Response
RWA 0801 VR	BETTY'S BIRTHDAY PLANS Alice — hamburger, coke, fries Barbara - hot dog, orange drink, fries Cathy - hamburger, milkshake, fries Elizabeth - cheeseburger, milkshake, fries Frances - hot dog, coke, fries Gerry - cheeseburger, orange drink, fries Heather - hot dog, milkshake, fries Irene - hot dog, coke, fries Jackie - hot dog, orange drink, fries Complete the table below by using the above facts. BETTY'S BIRTHDAY PLANS	

Item	Tally	Number
Fries	𝍸 𝍸	10
Hot dogs		
Hamburgers		

	Instrument	Correct Response
RWA 0802 VR	SUPERMARKET PRICES FOR JUICE	

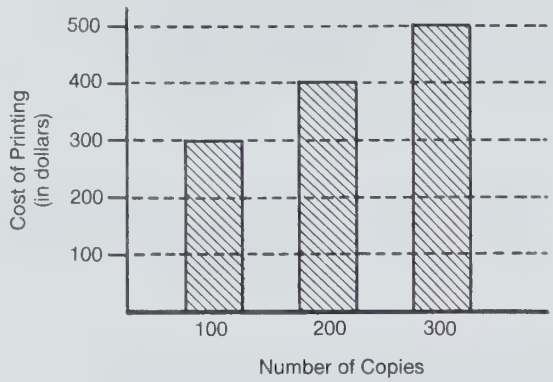
Store 1) 40¢	Store 6) 39¢	Store 11) 42¢
Store 2) 40¢	Store 7) 40¢	Store 12) 40¢
Store 3) 35¢	Store 8) 37¢	Store 13) 41¢
Store 4) 41¢	Store 9) 38¢	Store 14) 39¢
Store 5) 42¢	Store 10) 40¢	Store 15) 37¢

Complete the table using the above facts.

Price	Tally	Number

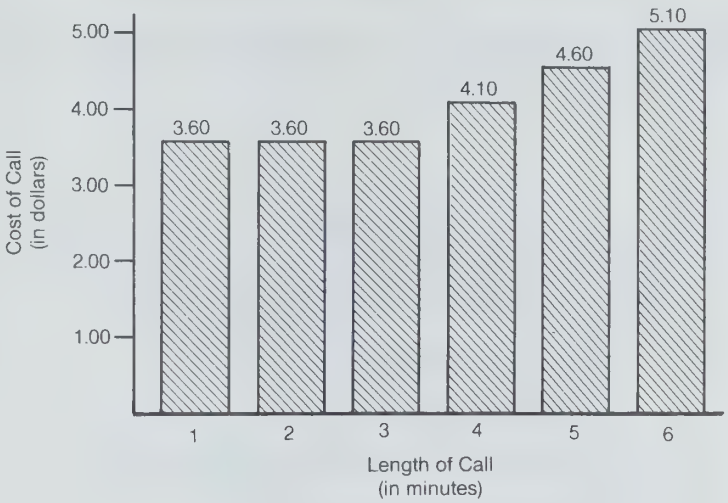
STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Arrays	Applications

Objective — Given a bar graph, the student will interpret the graph and solve related problems.

	Instrument	Correct Response
RWA 0901 DM	COST OF PRINTING A MAGAZINE  Use the above graph to answer questions (i), (ii) and (iii). (i) Once the first 100 copies are printed the cost of the next 100 copies is (A) $400 (B) $300 (C) $200 (D) $100 ____ (ii) How much can be saved by buying 300 copies at once instead of 3 separate sets of 100 copies? (A) $200 (B) $300 (C) $400 (D) $500 ____	D C

	Instrument	Correct Response
	(iii) Assuming that the pattern in the graph continues, how much could be saved by buying 500 copies at once instead of one set of 200 copies, and one set of 300? (A) $100 (B) $200 (C) $300 (D) $400 ____	B

	Instrument	Correct Response
RWA 0902 DR	COST OF PERSON-TO-PERSON PHONE CALLS FROM TORONTO TO NEW YORK CITY	



Use the above graph to answer questions (i), (ii) and (iii).

(i) Once the first 3 min have passed, what is the per minute cost of a call?

_____ 50¢

(ii) Assuming that the pattern in the graph continues, what is the cost of a 9 min call?

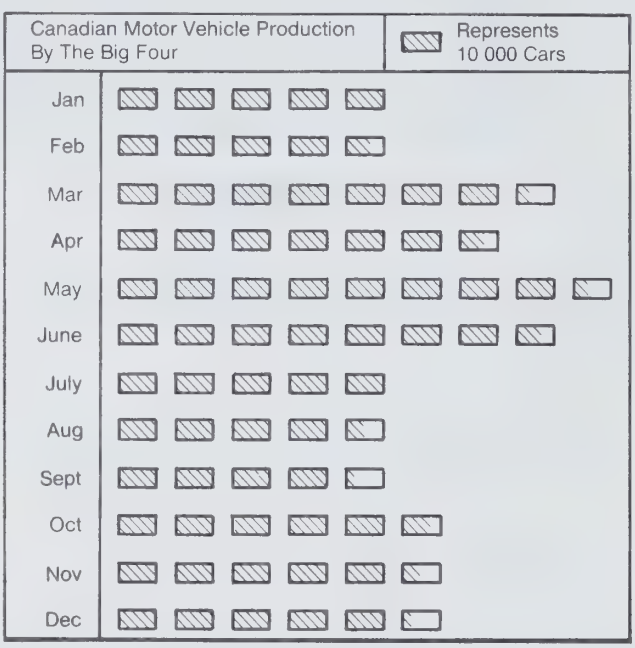
_____ $6.60

(iii) How much cheaper is the per minute cost of a 6 min call compared to that of a 3 min call?

_____ 35¢

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Fractions	Arrays	Applications

Objective — Given a pictograph, the student will interpret the graph and solve related problems.

	Instrument	Correct Response
RWA 1001 DM	 Use the above graph to answer questions (i), (ii) and (iii). (i) In which quarter of the year was the greatest number of cars produced? (A) First quarter (B) Second quarter (C) Third quarter (D) Fourth quarter ____	B

	Instrument	Correct Response
	(ii) Which one of the following is the best estimate of the average number of cars produced per month for the year? (A) 30 000 (B) 45 000 (C) 60 000 (D) 75 000 _____	C
	(iii) In which month did the production have the greatest growth when compared to the number of cars produced in the previous month? (A) March (B) April (C) May (D) June _____	A

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Whole Numbers	Arrays	Applications

Objective — Given a table of data, the student will interpret the graph and solve related problems.

	Instrument	Correct Response
RWA 1101 VR	TOOTHPASTE SURVEY	

GROUP	1	2	3	4	5	6	7	8	9	10
Number using Brand 'A'	8	7	5	16	14	10	9	8	4	9
Number using Brand 'B'	10	12	8	1	4	10	9	4	2	0
Number using Other Brands	2	1	7	3	2	0	2	8	14	11

Use the above table to answer questions (i), (ii) and (iii).

(i) How many people took part in the survey?

_____ 200

(ii) How many people used neither brand "A" nor brand "B"?

_____ 50

(iii) Based on the survey, which brand seems to be most popular?

_____ Brand 'A'

	Instrument	Correct Response
RWA 1102 VM	MATHEMATICS TEST SCORES	

Score Interval	Number of Students
63-64	2
65-66	2
67-68	3
69-70	4
71-72	3
73-74	3
75-76	2
77-78	2

Use the above table to answer questions (i), (ii) and (iii).

(i) How many students wrote the mathematics test?

(A) 19
(B) 20
(C) 21
(D) 22 _____ C

(ii) The middle score on the test is in the interval

(A) 67 - 68
(B) 69 - 70
(C) 71 - 72
(D) 73 - 74 _____ B

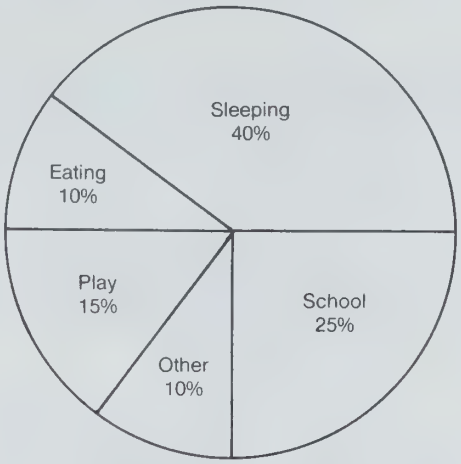
(iii) How many students scored between 66 and 75?

(A) 11
(B) 13
(C) 15
(D) 17 _____ B

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Fractions	Arrays	Skills

Objective — Given a circle graph representation of a set of data, the student will identify specific facts.

	Instrument	Correct Response
RFA 0101 DM	EYE COLOUR IN MISS LEE'S CLASS Use the above graph to answer questions (i) and (ii). (i) What fraction of Miss Lee's class has brown eyes? (A) $\frac{5}{30}$ (B) $\frac{10}{30}$ (C) $\frac{15}{30}$ (D) $\frac{20}{30}$ ____ (ii) The number of students taking part in eye colour survey is (A) 0 (B) 10 (C) 20 (D) 30 ____	B D

	Instrument	Correct Response
RFA 0102 DR	ACTIVITIES IN A TYPICAL STUDENT'S DAY	
		
	Use the above graph to answer questions (i), (ii) and (iii).	
	(i) Which activity occupies the largest part of a student's day?	
	_____	Sleeping
	(ii) What percent (%) of a student's day is spent at school?	
	_____	25%
	(iii) What percent (%) of a student's day is spent on Play and Other activities?	
	_____	25%

STRAND	SECTION	TOPIC	SUB-TOPIC	CATEGORY
Arithmetic	Relationships	Fractions	Arrays	Skills

Objective — Given a table of data, the student will plan and/or construct a circle graph.

	Instrument	Correct Response
RFA 0201 VM	SPENDING JOHN'S ALLOWANCE	

Expense	Amount
Comic Book	$0.50
Candy	$1.00
Savings	$1.50

To construct a circle graph representing these facts the circle must be split into

(A) 1 region
(B) 2 regions
(C) 3 regions
(D) 4 regions

____

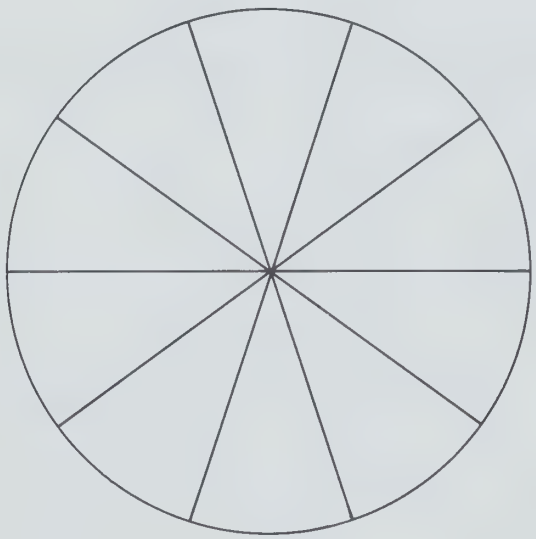
C

	Instrument	Correct Response
RFA 0202 VS	JOB TRAINING PLACEMENTS	

TRADE	NUMBER OF PLACEMENTS
Plumbers	30
Painters	20
Carpenters	40
Electricians	10

On the circular grid below construct a circle graph representing the above data. Be sure to label your graph.

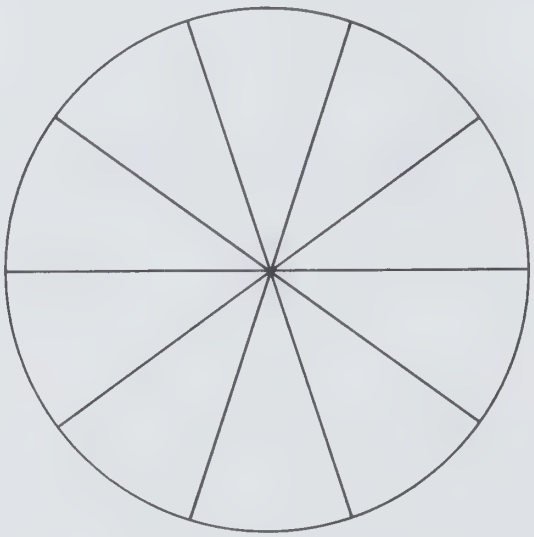
JOB TRAINING PLACEMENTS



	Instrument	Correct Response
RFA 0203 VS	TIM'S $100 CLOTHING BUDGET	

Clothes	Cost
2 pairs of jeans at $15.00 each	$30.00
3 shirts at $10.00 each	$30.00
1 jacket at $15.00 each	$15.00
5 pairs of socks at $1.00 each	$5.00
1 pair of running shoes at $20.00 each	$20.00

On the circular grid below construct a circle graph representing the above data. Use 1 sector of the circle to represent $10. Be sure to label and title your graph.



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